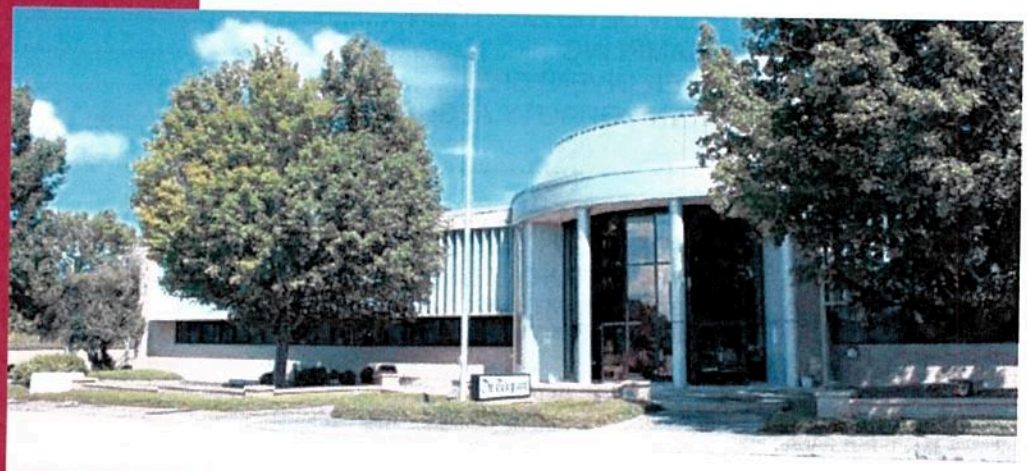
LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT



FORMER MACON TELEGRAPH PUBLISHING COMPANY & ADJACENT PARKING LOTS
Macon, Georgia

PREPARED FOR:
Macon-Bibb County
700 Poplar Street
Macon, GA 31201

EPA Cooperative Agreement No. BF-00D32515-0

August 2017

Resolute
Environmental & Water Resources Consulting

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1.0 INTRODUCTION

Resolute Environmental & Water Resources Consulting, LLC (Resolute) was retained by Macon-Bibb County (Client) to complete a Limited Phase II Environmental Site Assessment (ESA) on the subject parcel assemblage known as the Former Macon Telegraph Publishing Company & Adjacent Parking Lots (Site): 120 Broadway (Main Building), 139 Broadway (Riverside Drive Parking Lot), and 179 Fifth Street (MLK Jr Blvd Parking Lot). The Site owner, 120 Macon MRP c/o WhiteStar Advisors LLC (Owner), also owns adjacent property 415 Walnut Street (Former Fueling Station), but this parcel was excluded from the Phase II activities described herein due to historical petroleum contamination confirmed by documented involvement with the Georgia Environmental Protection Division (EPD) Underground Storage Tank Management Program (USTMP) and the associated eligibility limitations of Macon-Bibb County's United States Environmental Protection Agency (EPA) Petroleum Site Assessment Grant. The Site location can be seen in **Appendix A** as **Figure 1**.

1.1 LIMITATIONS

Resolute has performed a Limited Phase II ESA in general accordance with American Society for Testing Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process, Designation: E1903-11*, which is a limited inquiry into a property's environmental status and is not sufficient to discover every potential source of environmental liability or environmental impact, if any, of the property to be evaluated. No ESA can wholly eliminate uncertainty regarding the potential for *Recognized Environmental Conditions* (RECs) in connection with a property. Performance of this Limited Phase II ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with a property, and this practice recognizes reasonable limits of time and cost.

The level of inquiry is variable. Not every property will warrant the same level of assessment. Consistent with good commercial or customary practices, the appropriate level of ESA will be guided by the type of property subject to assessment, the expertise and risk tolerance of Macon-Bibb County (Client or User), and the information developed in the course of the inquiry.

Resolute's assessment represents our professional opinion, only. Therefore, Resolute cannot, under any circumstances, make a statement of warranty or guarantee, expressed or implied, that RECs, environmental impairment, or environmental impacts are limited to those that are discovered while we are performing the Limited Phase II ESA.

1.2 USER RELIANCE

Resolute's Limited Phase II ESA report, along with the findings and conclusions contained in the report, either in completed form, summary form, or by extraction, is prepared, and intended, for the sole use of the Client and Owner and therefore may not contain sufficient information for other purposes or parties. The Client and Owner are the only intended beneficiaries of this report. The contents of Resolute's report will continue to be the property of Resolute. Resolute's report may not be disclosed to, used by, or relied upon by, any person or entity other than the Client and Owner without the express written consent of Resolute.

Authorization for disclosure to a third party or authorization for third-party reliance on a final report of any report will be considered by Resolute upon the written request of the Client and/or Owner. Resolute reserves the right to deny authorization to allow disclosure or reliance of Resolute's report to third parties.

1.3 SITE AND PROJECT INFORMATION

The Site, approximately four acres in size, is commercially developed in Central Business District 1 (CBD-1) zoning classification and is bounded by Riverside Drive to the north, Martin Luther King Jr Boulevard to the east, Walnut Street to the South, and 3rd Street Lane to the west. The 140,000± ft^2 three-story former Macon Telegraph newspaper office, distribution, and printing building with basement is the main Site feature. The building was used to produce newspapers until April 2009, and was retained as office space for the Telegraph until 2011 when its remaining employees vacated and the property was incorporated as an asset of the company pension plan. A former fueling station containing an abandoned soil vapor extraction (SVE), air sparge, and groundwater treatment system previously used by Macon Telegraph in the Broadway parking lot at Walnut Street is another significant Site feature.

Adjacent properties include Macon Machine Shop to the south of the main building, Marathon Gas to the east of the MLK Jr Blvd parking lot, former Saf-T-Oil filling station to the south of the MLK Jr Blvd parking lot, One Hour Valet dry cleaners to the south of the former fueling station, the Bibb County Tag Office to the west of the former fueling station, and Macon Occupational Medicine to the west of the Riverside Drive parking lot.

Resolute conducted a Phase I ESA for the Site dated January 26, 2017 that identified the following on-Site RECs in connection with the Site:

- The abandoned SVE and air sparge groundwater remediation system associated with the involvement of the former fueling station with state Leaking

Underground Storage Tank (LUST) & Underground Storage Tank (UST) programs constitutes a controlled, historical REC.

- Though not explicitly cited as a historical REC in the Phase I report, the former presence of an auto repair shop on the Riverside Drive parking lot and its historical use for auto sales was recognized as an area with associated potential environmental impacts.

- A single railroad track observed leading from the eastern edge of the main building to the eastern edge of the parcel boundary, coupled with findings from historical Sanborn® maps including two storage tanks and a building designated as "barrel storage" confirms the Site's former status as a freight station and therefore constitutes a REC.

- Artifacts from the main building's historical use as a publishing company including black staining & concrete rubble in the press room and adjacent ink room, standing sump water, and the presence of chemicals associated with newspaper production constitute an additional REC.

2.0 LIMITED PHASE II ESA

Based on the findings of the Phase I ESA, Resolute proposed a Limited Phase II ESA to investigate the potential impacts to soil and groundwater on the Site and inventory & characterize waste within the main building. As documented in the Site-Specific Quality Assurance Project Plan (SSQAPP) included as **Appendix B**, the investigation was funded with the FY 2015 Macon-Bibb County EPA Brownfield Assessment Grant. Our investigation procedures, findings, conclusions, and recommendations are presented in the following sections.

2.1 SOIL BORING INSTALLATION AND SOIL SAMPLING

Beginning May 1, 2017, a total of 13 soil borings across the three Site parcels were advanced into the phreatic zone or until refusal (between 22 and 32 feet below ground surface [BGS]) by Atlas Geo-Sampling Company using a truck-mounted Direct Push Technology (DPT) rig. One (1) soil sample was collected from each of the 13 borings based on visible impact and results from in-field screening with a photoionization detector (PID). Eight (8) of the 13 borings were completed as groundwater monitoring wells. Well construction techniques are discussed in Section 2.2. Soil borings and monitoring wells (shown in **Figure 1** of **Appendix A**, and detailed in the boring logs in **Appendix C**) were placed based primarily on findings from the Phase I ESA conducted at the Site and are discussed below.

Potential soil impacts from the former auto repair shop on the parcel were assessed by advancing a total of five borings, including the installation of two monitoring wells: RMW-01 hydraulically downgradient of the former structure and RMW-02 hydraulically downgradient of the former remediation system. Three supplemental soil borings across the parking lot, RSB-01, RSB-02, and RSB-03, served to assess impacts from the lot's historical use as an automobile dealership.

To assess soil impacts near the main building from hydraulically upgradient sources, including One Hour Valet dry cleaners 160 feet southwest of the former fueling station, the boring for monitoring well RMW-03 was advanced. Soil samples collected during the installation of monitoring wells RMW-04 and RMW-05, combined with supplemental soil boring RSB-04, enabled an impact assessment from the freight station and petroleum tanks known to historically occupy the parcel. Impacts from historical activities related to the railroad tracks currently in-place on the east side of the parcel were assessed by the installation of RMW-06. In the southeast corner of the parcel, monitoring well RMW-07 was installed downgradient of an area historically designated as "barrel storage" to assess related impacts.

Collecting soil samples during the installation of monitoring wells RMW-08 and RMW-09 evaluated potential impacts from the neighboring Macon Machine Shop to the west and former Saf-T-Oil filling station to the south, respectively. The monitoring well planned to be designated as RMW-08 was ultimately not installed based on localized geological conditions and perceived poor groundwater transmission potential.

Based on PID results and field observations (odor/staining), the following soil samples were submitted for laboratory analysis from the specified depths:

Soil Boring	Depth (in feet BGS)
RSB-01	0.5 - 3.4
RMW-01*	16.0 - 20.0
RSB-02	16.0 - 20.0
RSB-03	0.6 - 3.1
RMW-02	20.0 - 23.9
RMW-03	0.9 - 2.7
RMW-04	4.0 - 7.7
RSB-04	1.0 - 3.6
RMW-05	8.0 - 12.0
RMW-06	12.0 - 15.4
RMW-07	20.0 - 24.0
RMW-08	0.5 - 3.4
RMW-09	16.0 - 20.0

* Duplicate sample collected from RMW-01

A total of 13 soil samples, plus one duplicate sample, collected from the soil borings listed above were submitted to Analytical Environmental Services, Inc. (AES) in Atlanta, Georgia for the following analyses:

- Volatile Organic Compounds (VOCs) via EPA Method 8260
- Semivolatile Organic Compounds (SVOCs) via EPA Method 8270
- RCRA Metals via EPA Method 6010 & 7471
- Total Petroleum Hydrocarbons (TPH):
    - Diesel Range Organics (DRO) via EPA Method 8015
    - Gasoline Range Organics (GRO) via EPA Method 8015

This range of constituents was analyzed in each of the 14 samples to provide a broad characterization to match the varied historical uses across the Site.

2.2 MONITORING WELL INSTALLATION & GROUNDWATER SAMPLING

Eight (8) of the 13 borings discussed in Section 2.1 were completed as groundwater monitoring wells to gain a more robust understanding of Site hydrogeology and enable the collection of reproducible groundwater quality data. After the DPT boring and soil sampling was complete at each well location, hollow steam augers (HSA) were fitted to the drill rig to over-drill the open hole. Permanent 2-inch diameter polyvinyl chloride (PVC) monitoring wells were then installed in 5-foot sections through the interior of the augers. Screen lengths (#10 machine-slot) for each well were installed at either 10 or 15 feet, depending on the amount of fine-grained soils and relative moisture encountered in the original DPT boring. Silica sand pack material was applied to two (2) feet above each well screen, above which bentonite chips were placed up to the surface as a seal. Each monitoring well was finished at the surface using a traffic-rated, flush-mount vault within a 2-foot by 2-foot concrete pad. Well casings were cut, surveyed by Resolute field staff, and fitted with padlocked expanding caps. Monitoring well construction details are provided in the well construction diagrams in **Appendix C** and in **Table 1** of **Appendix D**.

During the week following completion, the monitoring wells were developed using a Proactive Water Spout 2 ® pump until five well volumes were removed. Exceptionally, wells RMW-01 and RMW-04 proved to yield a limited amount of groundwater with relatively poor recharge. These wells required the use of a peristaltic pump with low-density polyethylene (LDPE) tubing to achieve the five-well volume development goal. Suspended fines and foreign materials from the initial soil borings were purged during development with the goal of encouraging formation groundwater to enter the well screens and producing water with a turbidity of less than 10 Nephelometric Turbidity Units (NTU). Notably, the exceptionally poor recharge at RMW-01 forced a sporadic development which severely limited the ability to remove fines, resulting in purge water which remained nearly opaque by visual inspection. Since the turbidity development goal was not achieved by a significant margin, RMW-01 was excluded from groundwater sampling. Water quality parameters were obtained and recorded during development using an In-Situ smarTROLL, which was used to produce the well development logs included in **Appendix E**.

Groundwater samples were collected from the wells using a peristaltic pump and LDPE tubing under low flow protocol, and were submitted to a laboratory for the same analyses as their corresponding soil samples. Exceptionally, the limited amount of groundwater available in RMW-04 did not allow for the collection of a sample volume sufficient for SVOC analysis. In-Situ smarTROLL groundwater sampling logs are included in **Appendix E**.

2.3 GROUNDWATER FLOW DETERMINATION

Prior to initiating groundwater sampling, depth-to-groundwater measurements were taken from the top of each newly installed monitoring well casing. Upon the completion of sampling activities, the monitoring wells were surveyed by Resolute environmental field technicians to obtain relative geospatial locations and top-of-casing elevations. Utilizing this collected data, **Figure 2** of **Appendix A** displays the Site potentiometric surface, showing that groundwater flows north-northeast toward the Ocmulgee River. The data used to produce this map is contained in **Table 2** of **Appendix D.**

2.4 WASTE MATERIAL SAMPLING

On May 17, 2017, four (4) waste material samples were collected: a composite press room rubble sample (WPR), a composite rubble sample from the adjacent ink room (EPR), a standing water sample from the ink room sump (IRS), and a standing water sample from the subfloor warehouse sump (SS).

The two (2) representative rubble samples were submitted to AES for a total constituent analysis of the same analyte suite specified in Section 2.1, with the exception of TPH. Elevated metals concentrations identified on a total constituent basis in both rubble samples (further discussed in Section 3.3.3) triggered a metals toxicity characteristic leaching procedure (TCLP) analysis by AES. During rubble sample collection, localized floor cracking or alternative routes of soil exposure were investigated.

Both standing water sump samples were submitted to AES for analysis of the same constituent suite specified in Section 2.1, with the exception of TPH.

2.5 CHEMICAL CONTAINER INVENTORY

An inventory of the several labeled and unlabeled chemical containers and drums present within the main building, generally around the former pressroom, was conducted on May 17, 2017 to enable planning for the proper disposal of these materials under a separate future scope of work.

2.6 QUALITY CONTROL AND QUALITY ASSURANCE METHODS

Field procedures and protocols used during the Limited Phase II ESA were performed in general accordance with those prescribed by the USEPA Region IV Science and Ecosystem Support Division (SESD) guideline documents referenced in the SSQAPP as **Appendix B**.

As discussed in the SSQAPP, one duplicate groundwater sample, one duplicate soil sample, one matrix spike/matrix spike duplicate (MS/MSD) groundwater sample pair, one field blank sample, and one equipment rinsate blank sample was collected in the field. MS and MSD samples are a form of laboratory quality assurance/quality control (QA/QC) for determining matrix effects and the reliability of the analytical processes and equipment. Additionally, a trip blank for each sample shipment was provided by the laboratory. All quality control samples were submitted for laboratory analysis of the project constituent suite.

Samples were labeled with a distinct sample identification number, the sampler's initials and the date of collection. Each sample container was properly sealed, labeled, and placed on ice in a cooler for next-day transport to an accredited laboratory (AES) which used USEPA SW-846 protocols. A properly completed chain-of-custody form was initiated in the field and accompanied the samples when submitted to the laboratory for analyses. Copies of the chain-of custody form(s) are shown in the laboratory analytical reports included as **Appendix F**.

3.0 RESULTS

3.1 SOIL LABORATORY RESULTS

The complete laboratory analytical report for the 14 collected soil samples is included in **Appendix F** and all analytical detections above laboratory reporting limits (RLs) are included in **Table 3** of **Appendix D**.

3.1.1 SVOC Constituents

No SVOC constituents were detected in soil at concentrations that exceeded the laboratory RLs.

3.1.2 VOC Constituents

The sole VOC constituents detected above laboratory RLs were both found exclusively in the RMW-09 soil sample: Methyl Acetate at 0.045 mg/kg and Methyl Tert-Butyl Ether [MTBE] at 0.044 mg/kg.

3.1.3 Metals Constituents

Concentrations of Arsenic, Barium, Chromium, and Lead appeared above laboratory RLs in several of the soil samples. **Table 3** in **Appendix D** highlights which metals constituents were detected in each sample.

3.1.4 TPH Constituents

Though no GRO detections were reported by the laboratory, the detections of DRO in RSB-01 (19 mg/kg), RSB-03 (19 mg/kg), and RSB-04 (12 mg/kg) were above laboratory RLs.

3.1.5 QA/QC Results

One duplicate soil sample was collected from soil boring RMW-01, which was labeled as DUP-01. Paired results for all target analytes detected in DUP-01 were compared to RMW-01 using a relative percent difference calculation (RPD). The three detections found in these samples, Barium, Chromium, and Lead, were outside of the applicable validation acceptance criteria RPD of 30 percent or less. However, these constituents are commonly found at varying low concentrations within naturally occurring sediments typically found in Georgia Piedmont soils. Additionally, the results were detected below the Georgia Environmental Protection Division Hazardous Site Response Act Notification Concentrations (GA EPD HSRA NCs).

3.2 GROUNDWATER LABORATORY RESULTS

The complete laboratory analytical report for the collected groundwater samples is included in **Appendix F** and all analytical detections above laboratory RLs are included in **Table 4** of **Appendix D**.

3.2.1 VOC Constituents

VOC constituents were detected above laboratory RLs in three samples: RMW-02, RMW-04, and RMW-09. While the RMW-02 and RMW-09 groundwater samples each had just one VOC constituent detected (Tetrachloroethene [PCE] at 140 µg/L and MTBE at 1,500 µg/L, respectively), the RMW-04 sample showed several. **Table 4** in **Appendix D** highlights which VOC constituents were detected in each sample.

Groundwater VOC analytical results were run through the EPA Vapor Intrusion Screening Level (VISL) Calculator. This site-specific calculator helps determine whether any constituents found in groundwater samples pose a significant risk for vapor intrusion into Site buildings. Since RMW-04 was the only well near the main building with analytical VOC detections, its results were entered into the calculator under a commercial exposure scenario assuming an average groundwater temperature of 23 °C. Comparing the vapor intrusion risks for the detected VOCs at RMW-04 generated by the calculator against their default target screening levels (1.00E-05 for carcinogens, 1 for non-carcinogens), all constituents fell below except for Benzene, 1,2-Dibromo-3-chloropropane (DBCP), Ethylbenzene, and Xylenes. Results from the EPA VISL Calculator are summarized in **Table 5** of **Appendix D**.

3.2.2 SVOC Constituents

No SVOC constituents were detected in groundwater at concentrations that exceeded the laboratory RLs.

3.2.3 Metals Constituents

Concentrations of Barium appeared above laboratory RLs in all the groundwater samples. No other metals constituents were detected.

3.2.4 TPH Constituents

One DRO detection was reported by the laboratory: 6,700 µg/L in RMW-04. Two detections of GRO were reported by the laboratory: 31,00 µg/L in RMW-04 and 2,800 µg/L in RMW-09.

3.2.5 QA/QC Results

One duplicate groundwater sample was collected from monitoring well RMW-02, which was labeled as DUP-01. Paired results for all target analytes detected in DUP-01 were compared to RMW-02 using a relative percent difference calculation (RPD). The two detections found in these samples, Tetrachloroethene, and Barium, were within of the applicable validation acceptance criteria RPD of 30 percent or less. Additionally, one equipment blank, and one field blank were collected, and no target analytes were detected in these samples.

3.3 WASTE MATERIAL LABORATORY RESULTS

The complete laboratory analytical report for the collected rubble and sump water samples, and the subsequent rubble TCLP laboratory analytical report are both included in **Appendix F**. Results are summarized in **Table 6** of **Appendix D**.

3.3.1 VOC Constituents

No VOC constituents were detected in either sump water sample at concentrations that exceeded the laboratory RLs. Both rubble samples had VOC detections. The press room rubble sample (WPR) had one reported VOC constituent detection: Methyl acetate at 1.5 mg/kg. The ink room rubble sample (EPR) had two reported VOC constituent detections: Methyl acetate at 0.41 mg/kg and Styrene and 5.7 mg/kg.

3.3.2 SVOC Constituents

No SVOC constituents were detected in the ink room rubble sample (EPR) or either sump water sample at concentrations that exceeded the laboratory RLs. The press room rubble sample (WPR) had two reported SVOC constituent detections: Bis(2-ethylhexyl)phthalate at 60 mg/kg and Butyl benzyl phthalate at 480 mg/kg.

3.3.3 Metals Constituents

The press room rubble sample (WPR) had five (5) metals constituents detected above laboratory RLs: Barium at 249 mg/kg, Cadmium at 14.3 mg/kg, Chromium at 34.4 mg/kg, Lead at 608 mg/kg, and Mercury at 0.545 mg/kg. The ink room rubble sample (EPR) had three (3) metals constituents detected above laboratory RLs: Barium at 79.7 mg/kg, Chromium at 22.5 mg/kg, and Lead at 7.00 mg/kg. Both sump water samples had Barium concentrations detected above its laboratory reporting limit: the ink room sump sample (IRS) at 0.0580 mg/L and the subfloor warehouse sump sample (SS) at 0.0740 mg/L.

The elevated metals concentrations in both rubble samples warranted additional testing to determine if the material exhibits hazardous waste characteristics. As a result, AES was instructed to complete a Toxicity Characteristic Leachability Procedure (TCLP) extraction relative to both samples and the extract was subsequently analyzed for the eight RCRA metals. No metals constituents were detected above laboratory reporting limits from the TCLP analysis performed on either rubble sample.

3.4 CHEMICAL CONTAINER INVENTORY

The table below presents the findings of the chemical container inventory:

Main Level	
Lobby	• 1 fire extinguisher • (5) ~10 quart containers of rubber cement thinner
Office Space South of Lobby	• ~1 gal container of glass cleaner concentrate in supply closet • 2 cans of latex paint in telephone room
Bathroom North of Lobby	• ~1 quart container of bathroom cleaner

Second Floor	
Office Space South of Lobby	• 2 fire extinguishers in main office space • 2 fire extinguishers in hallway
Kitchen North of Lobby	• 1 fire extinguisher

Basement	
Southwest Corner	• 3 fire extinguishers • ~5 gal container of E-3000 Developer & Replenisher • 3 quart container of cleaner • 1 gal container of cleaner • 16 fl oz container of unknown liquid • 5 gal container of rapid access developer in locker room • 5 gal container of general fixer in locker room • (4) 1 gal containers of hardener in locker room • (2) 1 gal container of unknown liquid in locker room • 5 gal container of alkyd enamel in locker room • 16 fl oz container of HP Developer • 1 gal container of scanner drum service cleaner in dark room • (10) 1 pint bottles of Kodak Photo Flow 100 in dark room

Basement	
Southwest Corner	• (10) 5 gal containers AGFA Rapid Fixer outside dark room • (5) 5 gal containers of AGFA Gaveline outside dark room • (3) 5 gal containers of E-300 outside dark room • 55 gal drum of gaveline outside dark room • (3) 1 gal containers of Konica Hardener outside dark room • 55 gal drum of MacDermid FP Cleaner outside dark room • 5 gal container of Antitec GC Proof Developer outside dark room • 1 pint container of Sno-Rack Winter Lube outside dark room • 1 quart container of Am-Tech V-12 Turbo outside dark room • 55 gal drum of rapid fixer outside dark room
Northwest Corner	• 1 fire extinguisher near transformers • 10 gal container of X-Ice near transformers • 5 gal container of Selig Super Ice Go near transformers • 5 gal container of Mobil DTE Oil near transformers • ~60 gal tank/drum with ~20 gal of unknown crystals near transformers • 55 gal drum of Rapid Fixer A • ~1 gal container of pure gum arabic in west supply closet • ~1 gal container of QUIKRETE® in west supply closet • 11 fire extinguishers • ~1 gal container of 1,1,1-TCA • 1 can of paint • 2 spray bottles of window cleaner • ~1 gal container of acetone • ~1 gal container of fountain additive • ~16 fl oz container of defoamer • ~16 fl oz container of silicone spray • (10) 550 gram containers of toner in east supply closet • 1 can of penetrating oil spray in east supply closet • 1 can of wall cleaner in east supply closet
Northeast Corner	• 55 gal drum of unknown solids • 55 gal drum of sodium hypochlorite • 55 gal drum of print ink smut compound • 55 gal drum of ink • (3) 55 gal drums of waste oil • 5 gal container of isopropyl alcohol • 5 gal container of Tower Press Pro Wash • 5 gal container of negative plate developer

Basement	
Northeast Corner	• 5 gal of premium wash • (8) ~1 gal containers of press cleaner • (2) ~1 gal containers pink fountain solution • ~1 gal container of gum arabic
Central	• (1) 5 gal container of ink in ink room • (5) 1 gal miscellaneous inks & cleaners in ink room • 3 gal container of Certop Industrial ISO 68 in ink room • 4 L container of pH 7.00 buffer solution in ink room • 5 gal container of web splicing adhesive in ink room • 1 pint container of calcium/lime rust stain remover in ink room • 5 gal container of Evans food packing adhesive outside ink room • 5 gal container of ink in room at top of stairs outside ink room • 15 pressurized tanks of fire suppressant in room at top of stairs outside ink room (rear of air handling unit) • 2 gal container of Meyer Component 1 above press room • 55 gal drum of 10-55 Water Based Ink Dissolver above press room • 3 fire extinguishers in chiller room • (2) 15 gal drums of Chem-Aqua MBC 215 in chiller room • 30 gal drum of Chem-Aqua CWT 3301 in chiller room • 5 gal container of Chem-Aqua CWT 237 in chiller room • 5 gal container of SAS-4000-5 compressor fluid in chiller room

Basement	
Central	• 5 gal container of ANCO system cleaner in chiller room • (2) 5 gal containers and a 1 gal container of unknown liquid (waste oil suspected) in chiller room

Sub-Basement	
Pressroom	• 1 fire extinguisher • 55 gal drum of Mobil Gear 626 Oil
Southeast of Pressroom	• 6 fire extinguishers • 55 gal drum of Proxel GXL Industrial Microbiostat • (2) open-top 55 gal drums unknown liquid • (~17) 5 gal containers of ink • (2) 55 gal drums Chemcentral Diethylene Glycol

4.0 CONCLUSIONS

Resolute performed a Limited Phase II ESA on the subject parcel assemblage known as the Former Macon Telegraph Publishing Company & Adjacent Parking Lots. The study was performed in a manner generally consistent with the requirements of the ASTM 1903-11 and generally accepted industry standards.

4.1 SOIL

Soil analytical results, with the exception of TPH constituents, were screened against the EPD Hazardous Site Response Act (HSRA) Notification Criteria (NC) since the Official Code of Georgia (OCGA) mandates any exceeding detection must be reported by the property owner to EPD. Since TPH constituents are not regulated under HSRA, soil sample results for this class of analytes were screened against USTMP DLs (Detection Limits).

4.1.1 VOC / SVOC

Two (2) VOCs were detected above laboratory RLs, Methyl Acetate at 0.045 mg/kg and MTBE at 0.044 mg/kg, both in the RMW-09 sample. Neither constituent has established HSRA NC. No SVOCs were detected in the soil samples.

4.1.2 Metals

The identified concentrations of Arsenic, Barium, Chromium, and Lead are consistent with elemental background levels that are naturally found in soil within the Piedmont Geologic Region and, further, all below their established HSRA NC.

4.1.3 TPH

Though no GRO detections were reported by the laboratory, the detections of DRO in RSB-01 (19 mg/kg), RSB-03 (19 mg/kg), and RSB-04 (12 mg/kg) were above the USTMP DL (10 mg/kg). Given no free product was identified during the advancement of these borings and no other petroleum constituents were detected in the samples, however, the elevated DRO concentrations do not suggest or constitute a release per USTMP rules. Therefore, there is no reporting requirement regarding these detections.

4.2 GROUNDWATER

Groundwater analytical results were screened against the HSRA NC since the OCGA mandates any exceeding detection must be reported by the property owner to EPD.

4.2.1 VOC / SVOC

VOC constituents were detected above laboratory RLs in three samples: RMW-02, RMW-04, and RMW-09. The RMW-09 groundwater sample showed a detected concentration of MTBE above its laboratory RL, but does not have established HSRA NC. The table below shows the groundwater detections which exceed established HSRA NC (all values in µg/L):

	Sample ID	RMW-02	RMW-04
	Date/Time	5/10/17 16:00	5/11/17 8:50
Substance	**EPD HSRA NC**		
Volatile Organic Compounds (VOCs)			
1,2-Dibromo-3-chloropropane	**0.2**	< 5.0	**7.5**
Benzene	**5**	< 5.0	**540**
Ethylbenzene	**700**	< 5.0	**1,700**
Styrene	**100**	< 5.0	**150**
Tetrachloroethene	**5**	**130**	< 5.0
Trichloroethene	**5**	< 5.0	**6.2**

Benzene, and Ethylbenzene are petroleum products. Petroleum products are not regulated under the HSRA program, and are regulated under the Georgia Underground Storage Act. Therefore, there is no notification requirement for the detections of these petroleum products at the Subject Property. However, DBCP is a historical active ingredient in some nematicides and fumigants, PCE and Trichloroethene (TCE) are chlorinated solvents, and Styrene is commonly used to make plastics, which are known to be carcinogenic and are regulated under HSRA. **These substances were detected above their appropriate HSRA NCs, and therefore a notification requirement exists for the discovery of these substances in groundwater, according to Georgia Rule 391-3-19-.04, Notification Requirement.** No SVOCs were detected in the groundwater samples.

4.2.2 Vapor Migration

Comparing results from running the VOC groundwater analytical detections at RMW-04 through the EPA VISL Calculator against their default screening levels indicated an elevated vapor intrusion risk for Benzene, DBCP, Ethylbenzene, and Xylenes.

4.2.3 Metals

Concentrations of Barium appeared above laboratory RLs in all the groundwater samples, but below its established HSRA NC. No other metals constituents were detected.

4.2.4 TPH

There are no established HSRA NC for either of the detected TPH constituents.

4.3 INVESTIGATION DERIVED WASTE

All drill tailings and well development/purge water (investigation derived waste [IDW]) was containerized during the investigation. Resolute contracted Aqua-Terra Recycling & Treatment to formally characterize and properly dispose of the IDW. Based on analytical results, both the drill tailings and well development/purge water were classified as nonhazardous with respect to disposal. The IDW was shipped for disposal on August 10, 2017, as indicated on the waste manifest included as **Appendix G**.

4.4 WASTE MATERIALS

Rubble analytical results were screened first against laboratory reporting limits to identify which constituents were present at elevated concentrations, thereby triggering a TCLP analysis. Rubble TCLP analytical results were then screened against the established EPA limits for characteristic hazardous waste. Sump water samples were screened against EPD Maximum Contaminant Levels for Drinking Water (MCLs).

4.4.1 VOC / SVOC

Neither of the VOCs detected above laboratory reporting limits in the rubble samples, Methyl acetate and Styrene, have established EPA TCLP limits for characteristic hazardous waste. Similarly, neither of the two SVOCs detected above laboratory reporting limits in the rubble samples, Bis(2-ethylhexyl)phthalate and Butyl benzyl phthalate, have established EPA TCLP limits for characteristic hazardous waste. There were no VOC or SVOC detections in either of the sump water samples.

4.4.2 Metals

The elevated metals concentrations in both rubble samples triggered a TCLP extraction followed by the analysis of the extract for the eight RCRA metals. Since no metals constituents were detected above laboratory reporting limits from the

TCLP analysis performed on either rubble sample, both the press room rubble and ink room rubble are considered nonhazardous with respect to disposal.

The identified concentrations of the only analyte detected in either sump water sample, Barium, both fall two orders of magnitude below the established EPD MCL, 2 mg/L. The standing water in both sumps, therefore, is considered to be RCRA nonhazardous.

4.5 HSRA NOTIFICATION REPORT

Pursuant to Georgia Rule 391-3-19-.04, Resolute submitted a HSRA Notification Report on June 22, 2017 for the VOC groundwater detections which were greater than their applicable HSRA NCs. After their review of the HSRA Notification Report, which included a draft version of this Phase II ESA report, EPD formally recommended to not list the Site on the Hazardous Site Inventory, as indicated in the non-listing letter included as **Appendix H**.

5.0 RECOMMENDATIONS

Based on the investigations completed to date, Resolute offers the following recommendations:

- Based on the VOC groundwater analytical detections at RMW-04, there is an elevated vapor intrusion risk for Benzene, DBCP, Ethylbenzene, and Xylenes. We recommend an additional Vapor Encroachment Screening (VES) in accordance with ASTM 2600 to further assess the presence of Vapor Encroachment Conditions (VEC).

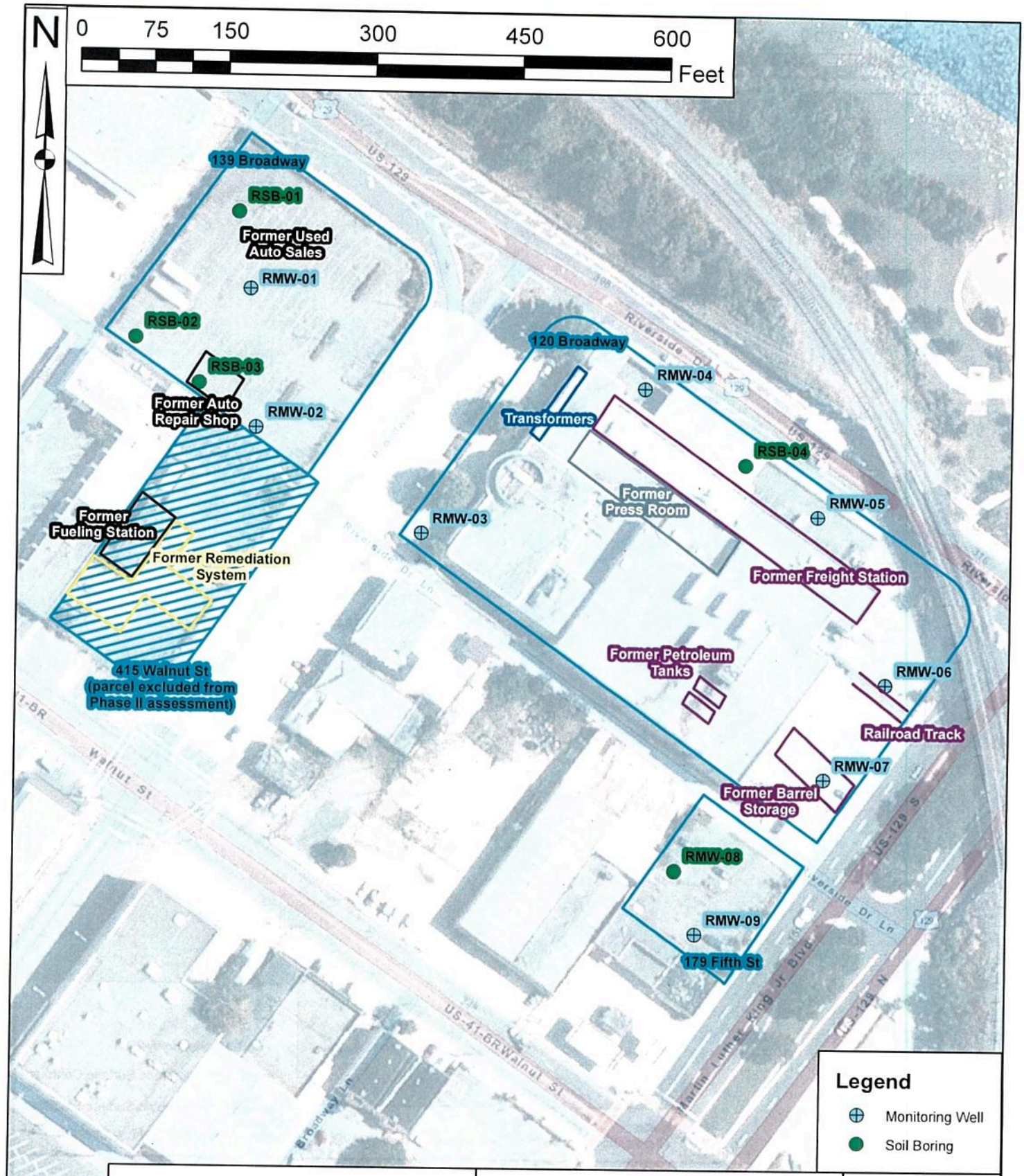
- The inventoried containerized materials should be characterized and offered for disposal at a permitted disposal facility, in accordance to state and federal rules and regulations.

- The press room and ink room debris does not exhibit hazardous waste characteristics, however all analytical data should be provided to the selected disposal facility and managed as a non-hazardous industrial waste.

- A purchaser of the property may want to consider applying for entry into the Georgia State Brownfield Program in order to realize program benefits, including limitation of liability, exemption to address groundwater contamination, and Brownfield tax credits.

APPENDIX A

FIGURES



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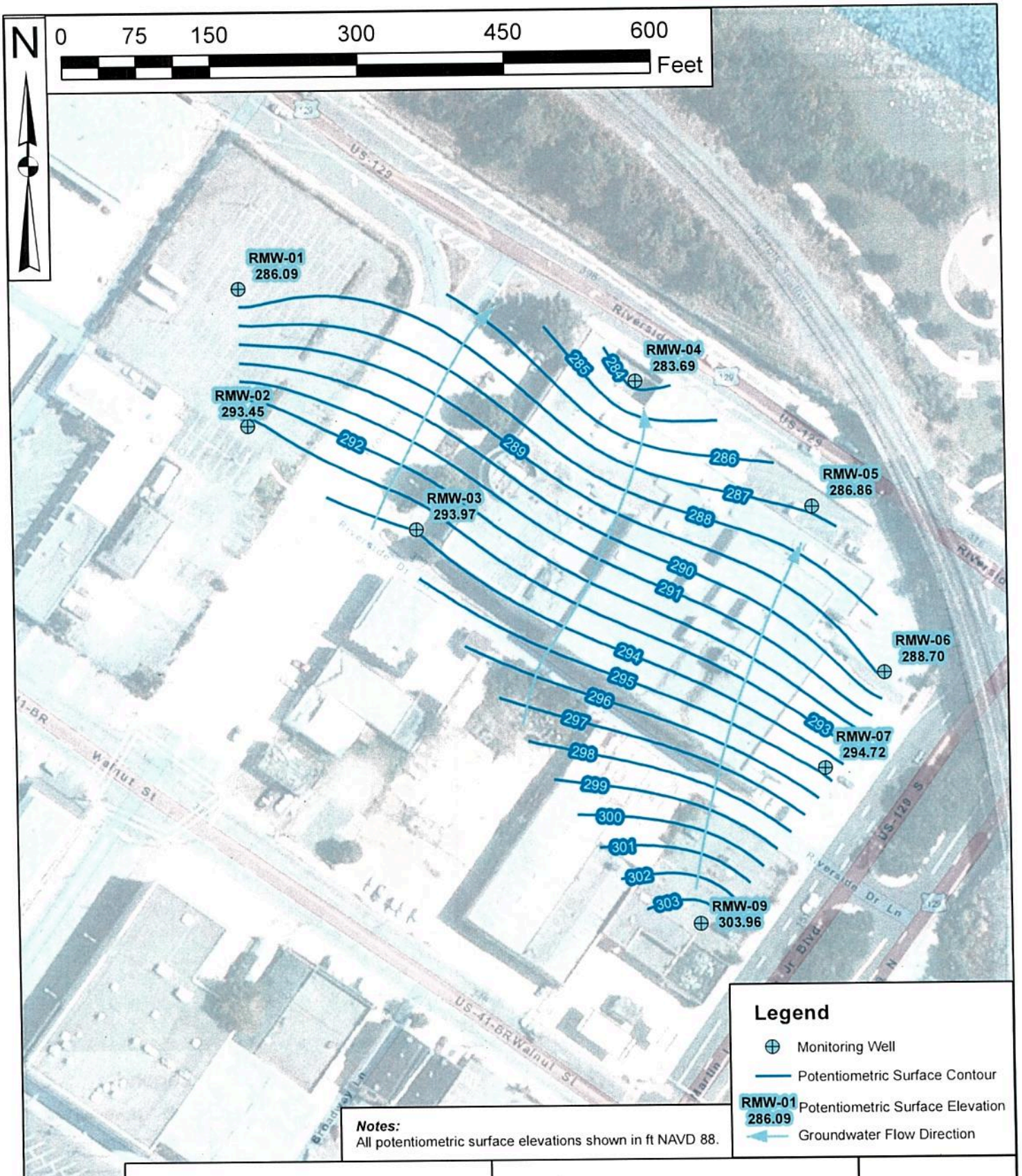
Woodstock, GA | August 2017

Former Macon Telegraph Publishing Company
Site Plan
Macon, GA

Figure
1



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Former Macon Telegraph Publishing Company Potentiometric Surface

Macon, GA

Figure 2

APPENDIX B

SITE-SPECIFIC QUALITY ASSURACE PROJECT PLAN

Draft - Site-Specific Quality Assurance Project Plan

Former Macon Telegraph Publishing Company & Adjacent Parking Lots (Eligible Parcels 120 Broadway, 139 Broadway, and 179 Fifth Street), Addendum 1A For the FY 2015 Macon-Bibb County Community-Wide Brownfield Assessment Program

EPA Cooperative Agreement Number: BF-00D32515-0

Prepared for:

Macon-Bibb County
700 Poplar Street
Macon, GA 31201

Prepared by:

Resolute Environmental & Water Resources Consulting, LLC
1001 Weatherstone Parkway, Suite 410
Woodstock, GA 30188
678-398-9942

Resolute
Environmental & Water Resources Consulting

April 2017

Approved by:

Project Manager: _____
Signature

Keith J. Ziobron, PE
Name **Date: April 11, 2017**

Quality Assurance/Quality Control Officer: _____
Signature

Stephen K. Wilson, PG
Name **Date: April 11, 2017**

U.S. EPA Project Manager and Approving Official: Bushra Jawaid
Signature

Bushra Jawaid April 18, 2017
Name **Date:**

Macon-Bibb County Representative: _____
Signature

Regina Sweeney May 26, 2017
Name **Date:**

A2. TABLE OF CONTENTS

List of Attachments:

A Project Organization Chart
B Figure 1 – Site Location
Figure 2 – Planned Phase II ESA Borings
C Signed Eligibility Verification
D Project Schedule
E EPA Region 4 SOP SESDGUID-101-R1: Design and Installation of Monitoring Wells

A3. DISTRIBUTION LIST

The following individuals will receive copies of the approved Quality Assurance Project Plan (QAPP) and subsequent revisions:

- Bushra Jawaid, Brownfields Project Officer/Manager/EPA Designated Approving Officials, United States Environmental Protection Agency (EPA) Region 4, Atlanta Federal Building, 61 Forsyth St. S.W., 10th Floor, Atlanta, GA 30303; Phone: (404) 562-8569; Email: jawaid.bushra@epa.gov

- Shannon Ridley, Brownfield Unit Manager, Georgia Environmental Protection Division (GA EPD), 2 Martin Luther King Jr. Drive, SE, Suite 1154 East Floyd Tower; Phone: (404) 656-7802; Email: shannon.ridley@dnr.ga.us

- Regina Sweeney, Budget/Grants Analyst, Macon-Bibb County, P.O. Box 247, 700 Poplar Street, Macon, GA 31201; Phone (478) 751-7366; Email: rsweeney@maconbibb.us

- Julie Moore, Assistant County Manager, Budget and Strategic Planning, Macon-Bibb County, 700 Poplar Street, Macon, GA 31201; Phone: (478) 751-7170; Email: jmoore@maconbibb.us

- Ioana Pacurar, Project Manager, Analytical Environmental Services, Inc. (AES), 3080 Presidential Drive, Atlanta, GA 30340; Phone: (770) 457-8177; Fax: (770) 457-8188; Email: ipacurar@aesatlanta.com

- Lauren Kerber, Laboratory Manager, EMSL Analytical, Inc., 2205 Corporate Plaza SE #200, Smyrna, GA 30080; Phone: (770) 956-9150; Email: lkerber@emsl.com

- Lisa Harvey, Project Manager II, TestAmerica Laboratories, Inc., 5102 LaRoche Avenue, Savannah, GA 31404-6019; Phone: (912) 354-7858 ext. 3221; Email: lisa.harvey@testamericainc.com

- Keith Ziobron, P.E., Project Manager, Resolute Environmental & Water Resources Consulting, LLC (Resolute); Phone: (678) 787-95761; Email: keith.ziobron@ResoluteEnv.com

- Stephen Wilson, P.G., Quality Assurance Manager, Resolute; Phone: (404) 358-8469; Email: stephen.wilson@ResoluteEnv.com

- Michael Patinkin, Staff Geological Engineer II, Resolute; Phone: (678) 232-9499; Email: michael.patinkin@ResoluteEnv.com

A4. PROJECT/TASK ORGANIZATION

The individuals participating in the project and their specific roles and responsibilities are provided below. A general project organization chart is provided as **Attachment A**.

Bushra Jawaid; EPA Region 4 Brownfields Project Officer/Manager/ Designated Approving Official (DAO) – The EPA Project Officer/Manager has the responsibility to oversee and monitor the grant. As part of that responsibility she must ensure the process described in the work plan is followed and the terms and conditions of the grant are met. The DAO's role is to provide technical reviews of the Generic QAPPs, Site-Specific QAPP Addendum and Addenda that are generated. This includes the approval of the Generic QAPP and Site-Specific QAPP modules/addenda.

Shannon Ridley, Brownfields Coordinator, GA EPD – This individual will be involved in review and approval of the cleanup plan which results in the enrollment of the site into the Georgia State Brownfield Program. This individual will also ensure plans are in compliance with current GA EPD rules and regulations. As a courtesy, Ms. Ridley will be provided with electronic copies of this and other project-related documents for information only.

Stephen Wilson, P.G., Quality Assurance/Quality Control (QA/QC) Officer, Resolute – The QA/QC officer will remain independent of the groups responsible for data generation and will provide QA/QC technical assistance to the Project Manager. The QA/QC officer will also be responsible for final internal review and approval of the Generic and Site-Specific QAPP documents, internal QA audits and QC implementation of the project. The QA/QC officer will report audit results to the Project Manager and review all implemented corrective actions.

Keith Ziobron, P.E., Project Manager, Resolute – The Project Manager will be the primary decision maker for the project and primary user of the data to determine if further action is required at the site. He will also coordinate the project activities and his specific responsibilities are:

- Approving the QAPP and subsequent revisions in terms of Brownfields specific requirements; distribution of the Generic QAPP document to the Field Team Leader and members of the project team.
- Overall responsibility of the investigation.
- Coordinating field and laboratory activities.
- Conducting project activities in accordance with the QAPP and work order.
- Validating field data.
- Reporting to the GA EPD Brownfields Coordinator and the Macon-Bibb County representative regarding the project status per the consultant agreement and preparing interim and final reports to EPD and the County.
- Making final project decisions with the authority to commit the necessary resources to conduct the project.
- Responsible for instituting corrective actions for problems encountered in the field sampling activities.

- Communicate corrective actions to the Field Team Leader to remedy problems encountered in the field and coordinate with the Lab Director to correct any corresponding problems encountered in the chemical analyses.
- Compile documentation detailing any corrective actions and provide them to the QA/QC officer and GAEPD Brownfields Project Coordinator.

Michael Patinkin, Field Team Leader, Resolute – The field team leader will perform the following duties:

- Selecting the field sampling team.
- Upon receipt from the Project Manager, distribute the approved QAPP documents and subsequent revisions to the members of the field sampling team.
- Conducting the field activities per the approved QAPP documents and supervise the field sampling team.
- Report problems in the field, if any, to the Project Manager.
- If needed, implement corrective actions in the field as directed by the Project Manager. Corrective actions will be documented in the field logs and provided to the Project Manager.
- Assist Project Manager with data tabulation and evaluation.

Resolute Field Team Technicians – These individuals will perform the actual fieldwork per the QAPP documents and at the direction of the field team leader. The field team typically consists of two to four people and will be named at a later date by the field team leader.

Laboratory/Project Manager for AES, EMSL, TestAmerica, or Other – This individual will be responsible for coordinating the analysis of the samples and laboratory validation of the data. They will coordinate the receipt of the samples at the laboratory, select the analytical team, ensure internal laboratory audits are conducted per the Laboratory's Quality Assurance Manual/Laboratory Quality Manual (QAM/LQM) and distribute the applicable sections of the QAPP and subsequent revisions to members of the analytical team. They are responsible for instituting corrective actions for problems encountered in the chemical analyses and will also report laboratory problems affecting the project data to the Project Manager and QA/QC Officer. Corrective actions for chemical analyses will be detailed in a QA report that will be provided to the Project Manager via electronic and conventional mail.

It should be noted that all laboratory service will be put out to bid in accordance with EPA procurement requirements. While the laboratories specified herein will likely complete the work, quotes may be obtained for additional laboratories. Should one of the other laboratories be selected, their QA/QC programs will be documented in site-specific QAPP Modules/addenda.

A5. PROBLEM DEFINITION/BACKGROUND

In December 2016, Resolute performed a Phase I Environmental Site Assessment (ESA) of the subject parcel assemblage known as the Former Macon Telegraph Publishing Company & Adjacent Parking Lots (Site): 120 Broadway (Main Building), 139 Broadway (Riverside Drive Parking Lot), 415 Walnut Street (Former Fueling Station), and 179 Fifth Street (MLK Jr Blvd Parking Lot). The subject assemblage was investigated under and funded by the FY 2015 Macon-Bibb County EPA Brownfield Assessment Grant, as it was identified as pivotal property for redevelopment in downtown Macon.

The Site, approximately four acres in size, is commercially developed in Central Business District 1 (CBD-1) zoning classification and is bounded by Riverside Drive to the North, Martin Luther King Jr Boulevard to the East, Walnut Street to the South, and 3rd Street Lane to the West. The 140,000± ft^2 three-story former Macon Telegraph newspaper office, distribution, and printing building with basement is the main Site feature. The building was used to produce newspapers until April 2009, and was retained as office space for the Telegraph until 2011 when its remaining employees vacated and the property was incorporated as an asset of the company pension plan. A former fueling station containing an abandoned soil vapor extraction (SVE), air sparge, and groundwater treatment system previously used by Macon Telegraph in the Broadway parking lot at Walnut Street is another significant Site feature.

Adjacent properties include Macon Machine Shop to the South of the main building, Marathon Gas to the East of the MLK Jr Blvd parking lot, former Saf-T-Oil filling station to the south of the MLK Jr Blvd parking lot, One Hour Valet dry cleaners to the south of the former fueling station, the Bibb County Tag Office to the west of the former fueling station, and Macon Occupational Medicine to West of the Riverside Drive parking lot. The Site location can be seen in **Attachment B** as **Figure 1**.

The purpose of the Phase I ESA was to identify apparent or suspect Recognized Environmental Conditions (RECs), either historical or present, and identify de minimis conditions. De minimis conditions are defined as conditions that are judged to not present a material risk of harm to health or the environment. The Phase I ESA revealed the following RECs and de minimis conditions at the subject property as defined by the ASTM Standard Practice E1527-13:

- The abandoned SVE and air sparge groundwater remediation system associated with the involvement of the former fueling station with state Leaking Underground Storage Tank (LUST) & Underground Storage Tank (UST) programs constitutes a controlled, historical REC.
- Though not explicitly cited as a historical REC in the Phase I report, the former presence of an auto repair shop on the Riverside Drive parking lot and its historical use for auto sales was recognized as an area with associated potential environmental impacts.
- A single railroad track observed leading from the eastern edge of the main building to the eastern edge of the parcel boundary, coupled with findings from historical Sanborn® maps including two storage tanks and a building designated as "barrel storage" confirms the Site's former status as a freight station and therefore constitutes a REC.

- Artifacts from the main building's historical use as a publishing company including sumps, the presence of chemicals associated with newspaper production, and black staining & concrete rubble in the pressroom constitute an additional REC.
- The series of electrical transformers discovered in the basement level of the main building along the western edge of its interior represent a de minimis condition. Although the manufacturer's plate on the transformer series suggests the dielectric fluid used in the machines is silicone and polychlorinated biphenyls (PCBs) may have been historically used in its place, the vault-like concrete structure of the basement limits the potential for environmental impact.
- The nearby, hydraulically up gradient presence of One Hour Valet dry cleaners represents another de minimis condition. The proximity of the dry cleaners allows for the potential of vapor encroachment into Site structures.

The Phase II ESA proposed herein was deemed eligible to be funded with the FY 2015 Macon-Bibb County EPA Brownfield Assessment Grant, as documented in the signed site eligibility form included in **Attachment C**. As noted in Appendix C, only 120 Broadway, 139 Broadway, and 179 Fifth Street were deemed eligible for further assessment, and hazardous constituents rather than petroleum are the likely contaminants associated with these parcels.

A6. PROJECT/TASK DESCRIPTION AND SCHEDULE

Historical Site uses ranging from the fueling station, the 1960s-era auto repair shop, the historical rail terminal, and the Macon Telegraph printing operations, together with the likely off-Site sources of contamination, suggest the potential for the presence of soil, groundwater, and/or vapor encroachment. Thus, it is recommended that a subsurface soil and groundwater investigation be performed to evaluate the presence of environmental impact. Additionally, within the main building, stained rubble in the pressroom and standing water in two sumps present the need for waste characterization while an imprecise amount of both labeled and unlabeled chemical containers present a need for a building chemical inventory.

A6.1. SOIL AND GROUNDWATER INVESTIGATION

Prior to beginning the field investigation, a Site Health and Safety Plan (HASP) for Resolute personnel and Resolute's Subcontractors will be prepared to meet the requirements of the Occupational Safety and Health Administration (OSHA) Standard 1910.120. This document will outline the potential hazards, the level of personal protection to be used, and the procedures to be followed for monitoring and emergency situations at the Site. It is assumed that the fieldwork will be performed in Level D personal protection (i.e. steel-toed boots and hard-hats). The Utility Protection Center will be contacted at least 72 hours prior to initiating the fieldwork to locate utilities.

As shown in **Figure 2**, a total of 13 soil borings advanced into the uppermost groundwater (~25 feet below ground surface) via Direct Push Technology (DPT) or Hollow Stem Auger (HSA) drill rig across the three Site parcels included in this investigation are proposed. Nine of the 13

borings will be completed as groundwater monitoring wells. The purpose of each boring is explained in detail in Section B1, Sampling Design Process.

A6.2. WASTE MATERIAL SAMPLING

During the Phase I ESA, two potential waste materials were identified: rubble in the pressroom and water standing in the sump. As part of the Phase II activities, these wastes will be sampled and analyzed to determine if they need be managed as hazardous waste by others.

The black staining & concrete rubble in the pressroom indicative of historic printing operations will be assessed. Two representative samples of the rubble will be collected and submitted to a laboratory for total constituent analysis of the same constituent suite specified in the subsurface soil and groundwater investigation objective, with the exception of TPH. If elevated concentrations of contaminants are identified on a total constituent basis, EPA will be notified of the intent to analyze these materials following a toxicity characteristic leaching procedure (TCLP) extraction. If localized floor cracking or a different route of soil exposure is identified after the rubble is removed during the sample collection, impacts to site soil and/or groundwater may be evaluated.

The contents of the standing water in the two sumps in the main building (subfloor warehouse & ink storage room) will be assessed. A representative sample from each sump will be collected and submitted to the selected laboratory for analysis of the same constituent suite specified in the subsurface soil and groundwater investigation objective, with the exception of TPH. Based on the laboratory results, a disposal recommendation will be noted in the Phase II ESA report.

Though the possibility of the dielectric fluid in the transformers located in the basement of the main building along the interior of its western wall containing PCBs still exists, the relative permanence and stability of the transformers within the building presents a low risk of the fluid being released into the environment. Thus, it is not recommended to characterize the fluid under this scope of work.

A6.3. CHEMICAL CONTAINER INVENTORY

An inventory of the several labeled and unlabeled chemical containers and drums present within the main building, generally around the former pressroom, will be conducted. Instances observed during the Phase I ESA included multiple 55-gallon drums of photographic fixing concentrate, a relatively small (less than 5-liter) metal container of 1,1,1-trichloroethane, and miscellaneous containers of various proprietary solutions associated with printing operations. A complete chemical container inventory will be created to enable proper disposal under a separate scope of work.

A6.4. PROJECT SCHEDULE

A table summarizing the tentative project schedule is provided in **Attachment D**. Drilling, sample collection, drum inventory, and associated fieldwork are anticipated to take approximately 8 working days to complete. Collected samples will be shipped overnight to the

analytical laboratory for analyses. Laboratory results will be provided to the Resolute Project Manager within 10 business days of sample receipt. Results and decisions for the Site should be complete within approximately 5 days of receipt of the final laboratory sample reports.

The final laboratory sample reports will summarize project results, and will include the QC data. The data validation report and raw data package will be maintained and be available to the Project Manager and QA/QC Officer. The laboratory report will be submitted to Macon-Bibb County and EPA Project Officer as part of the final report.

Ultimately, this proposed Phase II ESA is designed to aid in transitioning the Site into the Georgia Brownfield Program, since doing so may expedite cleanup and position the Site for future re-development. As such, it is recommended that the Site owner and/or Macon-Bibb County use the findings of the proposed assessment to meet with EPD and EPA to establish a path forward, so that the property can be better marketed for sale and re-development.

A7. SPECIAL TRAINING REQUIREMENTS/CERTIFICATION

In addition to the applicable training requirements and certifications for environmental field technicians and analytical laboratories provided in the approved Generic QAPP, a qualified drilling contractor experienced with constructing monitoring wells under the supervision a professional engineer/geologist will be contracted to facilitate project objectives.

A8. DOCUMENTS AND RECORDS

The principles provided in this section of the Generic QAPP for project records, sample collection and submission, chain of custody, investigation derived waste disposal, and laboratory results apply to this project. In addition to the specific EPA Region 4 Standard Operating Procedures (SOPs) which the Generic QAPP cites will be utilized, EPA Region 4 SOP SESDGUID-101-R1: Design and Installation of Monitoring Wells will be followed during this project and is included in **Attachment E**.

While working with the drilling subcontractor, environmental field technicians will follow guidance documents ASTM D5434 – 12: Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock and EPA Region 4 SESDGUID-101-R1: Design and Installation of Monitoring Wells. The drilling subcontractor will comply with the GA EPD Water Well Standards Act (OCGA 12-5-120) during construction of the planned monitoring wells. Finally, environmental field technicians will follow the guidelines of OSHA 29 CFR 1910.1200: Hazard Communication when developing an inventory of chemical containers within the main building.

B1. SAMPLING DESIGN PROCESS

Collection of soil and groundwater samples are intended to initially identify the presence or absence of regulated substances such that informed decisions can be made regarding detections and vapor encroachment risk can be assessed. Planned soil borings and monitoring wells (shown in **Figure 2**) were placed based primarily on findings from the Phase I ESA conducted at the site.

One soil sample will be collected from each boring based on visible impact and results from in-field screening with a photoionization detector (PID). The collected samples will be submitted to the selected laboratory for the following analyses:

- Volatile Organic Compounds (VOCs) via EPA Method 8260
- Semivolatile Organic Compounds (SVOCs) via EPA Method 8270
- RCRA Metals via EPA Method 6010 & 7471
- Total Petroleum Hydrocarbons (TPH):
    - Diesel Range Organics (DRO) via EPA Method 8015
    - Gasoline Range Organics (GRO) via EPA Method 8015

Of the 13 soil borings to be advanced, 9 will have permanent 2-inch PVC monitoring wells installed during drilling to gain a more robust understanding of Site hydrogeology and enable the collection of reproducible groundwater quality data. No groundwater samples will be collected from the four supplemental soil borings. The nine permanent wells will be developed and sampled after installation. Upon the completion of sampling activities, the soil sample locations and newly installed monitoring wells will be surveyed by environmental field technicians.

Groundwater samples will be submitted to a laboratory for the same analyses as their corresponding soil samples. Groundwater VOC analytical results will be run through the EPA Vapor Intrusion Screening Level Calculator (VISL). This site-specific calculator will help determine whether any constituents found in groundwater samples pose a significant risk for vapor intrusion into Site buildings; and, if so, whether additional vapor intrusion investigation and/or mitigation is warranted.

B1.1. RIVERSIDE DRIVE PARKING LOT @ 139 BROADWAY

Potential impacts to soil and groundwater from the former auto repair shop on the parcel will be assessed by installing two monitoring wells: RMW-01 hydraulically downgradient of the former structure and RMW-02 within the footprint of the former structure. Three supplemental soil borings across the parking lot, RSB-01, RSB-02, and RSB-03, will serve to assess impacts from the lot's historical use as an automobile dealership. If a PID response or visual indication of impact is not observed, the soil sample from each boring will be collected from immediately above groundwater.

B1.2. MAIN BUILDING @ 120 BROADWAY

To assess the potential for groundwater impact and resultant vapor intrusion into the main

building from hydraulically upgradient sources, including One Hour Valet dry cleaners 160 feet southwest of the former fueling station, monitoring well RMW-03 will be installed. If a PID response or visual indication of impact is not observed, the soil sample from RMW-03 will be collected from immediately above groundwater.

Monitoring wells RMW-04 and RMW-05, combined with supplemental soil boring RSB-04 will assess impacts from the freight station and petroleum tanks known to historically occupy the parcel. Impacts from historical activities related to the railroad tracks currently in-place on the east side of the parcel will be assessed by the installation of RMW-06. In the southeast corner of the parcel, monitoring well RMW-07 will be installed downgradient of an area historically designated as "barrel storage" to assess related impacts. If a PID response or visual indication of impact is not observed, the soil sample from each boring will be collected from immediately above groundwater.

B1.3. MLK JR BLVD PARKING LOT @ 179 FIFTH ST

Monitoring wells RMW-08 and RMW-09 will assess impacts from the neighboring Macon Machine Shop to the west and former Saf-T-Oil filling station to the south, respectively. If a PID response or visual indication of impact is not observed, the soil sample from each boring will be collected from immediately above groundwater.

B2. SAMPLING AND ANALYTICAL METHODS REQUIREMENTS

Information provided in the Generic QAPP specific to soil and groundwater sampling is applicable to this project. Further, for the purpose of sampling and analytical methods requirements, the pressroom rubble sampling task can be classified as soil sampling and the sump standing water sampling task can be classified as surface water sampling. Information provided in the Generic QAPP, therefore, covers the pressroom rubble sampling and sump standing water sampling tasks.

B3. SAMPLE HANDLING AND CUSTODY REQUIREMENTS

The sample custody procedures outlined in the Generic QAPP are applicable to this project.

B4. ANALYTICAL METHODS AND REQUIREMENTS

The corresponding Generic QAPP section is applicable to this project. Each sample collected under the scope of this project will be submitted for laboratory analysis of the following constituents:

- Volatile Organic Compounds (VOCs) via EPA Method 8260
- Semivolatile Organic Compounds (SVOCs) via EPA Method 8270
- RCRA Metals via EPA Method 6010 & 7471

- Total Petroleum Hydrocarbons (TPH):
    - Diesel Range Organics (DRO) via EPA Method 8015
    - Gasoline Range Organics (GRO) via EPA Method 8015

A laboratory turnaround time of 10 business days is anticipated.

B5. FIELD QUALITY CONTROL REQUIREMENTS

Field quality control guidelines for water and soil samples are provided in the Generic QAPP and will be followed for this project. Specifically, one duplicate groundwater sample, one duplicate soil sample, one matrix spike/matrix spike duplicate groundwater sample pair, one field blank sample, and one equipment rinsate blank sample will be collected in the field. A trip blank for each sample shipment will be provided by the laboratory. All quality control samples will be submitted for laboratory analysis of the project constituent suite.

B6. LABORATORY QUALITY CONTROL REQUIREMENTS

The selected laboratory will follow quality control procedures at all times for soil and water samples to be analyzed. Laboratory quality documentation is provided in the Generic QAPP.

B7. FIELD EQUIPMENT AND CORRECTIVE ACTION

Field equipment calibration and inspection procedures are outlined in the Generic QAPP. Water quality meters will be calibrated daily in the field per manufacturer specifications. Reusable sampling equipment including water level meters, stainless steel bowls, and stainless steel spoons will be decontaminated between uses.

B8. LAB EQUIPMENT AND CORRECTIVE ACTION

Analytical instrumentation testing, inspection, and maintenance procedures are addressed in the Generic QAPP and more explicitly in the laboratory quality documentation provided in **Attachment E**.

B9. ANALYTICAL SENSITIVITY AND PROJECT CRITERIA

Analytical method sensitivity and project criteria for the analytical methods within the scope of this project will be determined by the selected laboratory. Minimum detection limits for soil and groundwater samples will comply with the Georgia Comparison of Existing Contamination to Risk Reduction Standards (Rule 391-3-19-.07).

B10. DATA MANAGEMENT AND DOCUMENTS

Data and document management procedures provided in the Generic QAPP are applicable to this project.

C1. ASSESSMENT AND RESPONSE ACTIONS

Assessment and response action procedures provided in the Generic QAPP are applicable to this project.

C2. PROJECT REPORTS

In addition to the development of this Site-Specific QAPP Addendum, a Phase II ESA report will be created based on findings of the planned assessment. Execution of planned assessment activities will not commence until this Site-Specific QAPP Addendum is approved by EPA and GA EPD. The Generic QAPP provides a report outline and submittal process which will be followed for this project.

D1. FIELD DATA EVALUATION

Field data evaluation procedures provided in the Generic QAPP are applicable to this project.

D2. LABORATORY DATA EVALUATION

Laboratory data evaluation procedures provided in the Generic QAPP are applicable to this project.

D3. DATA USABILITY AND PROJECT VERIFICATION

Data usability and project verification procedures provided in the Generic QAPP are applicable to this project.

REFERENCES

ASTM International. 2012. ASTM D5434-12, *Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock*.

Code of Federal Regulations. 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*.

Code of Federal Regulations. 29 CFR 1910.1200, *Hazard Communication*.

Official Code of Georgia. OCGA 12-5-120, *Georgia Water Well Standards Act*.

Resolute Environmental & Water Resources Consulting, LLC. March 2016. *Generic Quality Assurance Project Plan – The FY 2015 Macon-Bibb County Community-Wide Brownfield Assessment Program*.

Resolute Environmental & Water Resources Consulting, LLC. January 2017. *Phase I Environmental Site Assessment Report*.

Rules and Regulations of the State of Georgia. Rule 391-3-19-.07, *Risk Reduction Standards*.

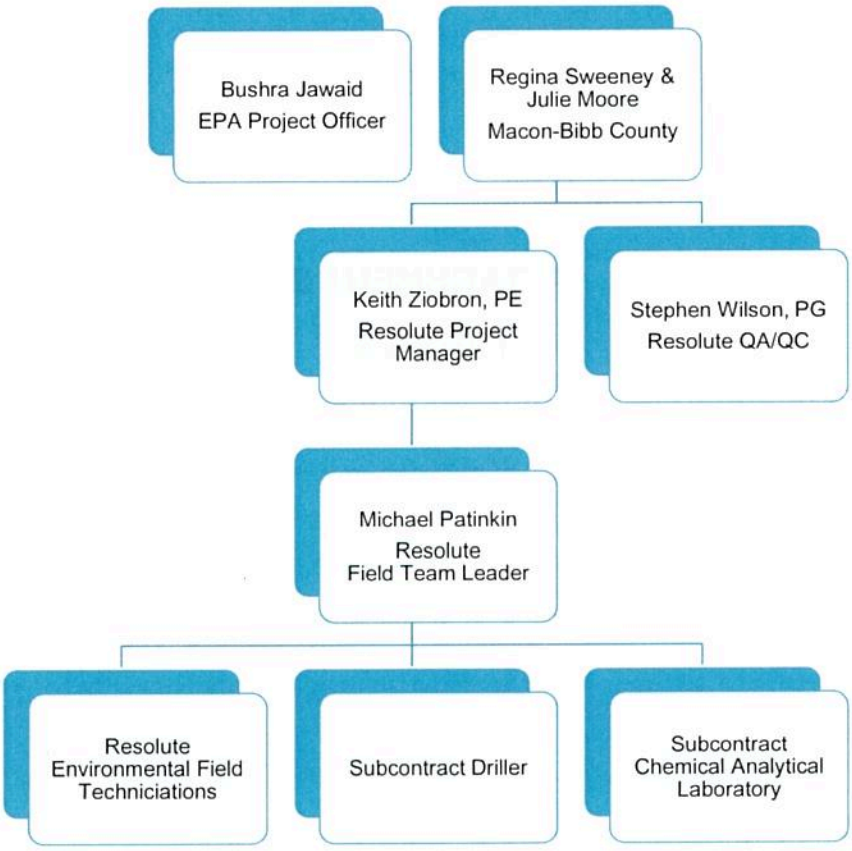
LIST OF ABBREVIATIONS

AES:	Analytical Environmental Services
ASTM:	American Society for Testing and Materials
DAO:	Designated Approving Officer
DPT:	Direct Push Technology
DRO:	Diesel Range Organics
EPA:	United States Environmental Protection Agency
GA EPD:	Georgia Environmental Protection Division
GRO:	Gasoline Range Organics
ESA:	Environmental Site Assessment
HASP:	Health & Safety Plan
HSA:	Hollow Stem Auger
LQM:	Laboratory Quality Manual
LUST:	Leaking Underground Storage Tank
OCGA:	Official Code of Georgia
OSHA:	Occupational Safety and Health Administration
PCB:	Polychlorinated Biphenyl
PE:	Professional Engineer
PG:	Professional Geologist
PID:	Photoionization Detector
QA:	Quality Assurance
QAM:	Quality Assurance Manual
QC:	Quality Control
REC:	Recognized Environmental Condition
RCRA:	Resource and Conservation Recovery Act
SOP:	Standard Operating Procedure
SVE:	Soil Vapor Extraction
SVOC:	Semivolatile Organic Compound
TPH:	Total Petroleum Hydrocarbon
UST:	Underground Storage Tank
VISL:	Vapor Intrusion Screening Level Calculator
VOC:	Volatile Organic Compound

ATTACHMENT A

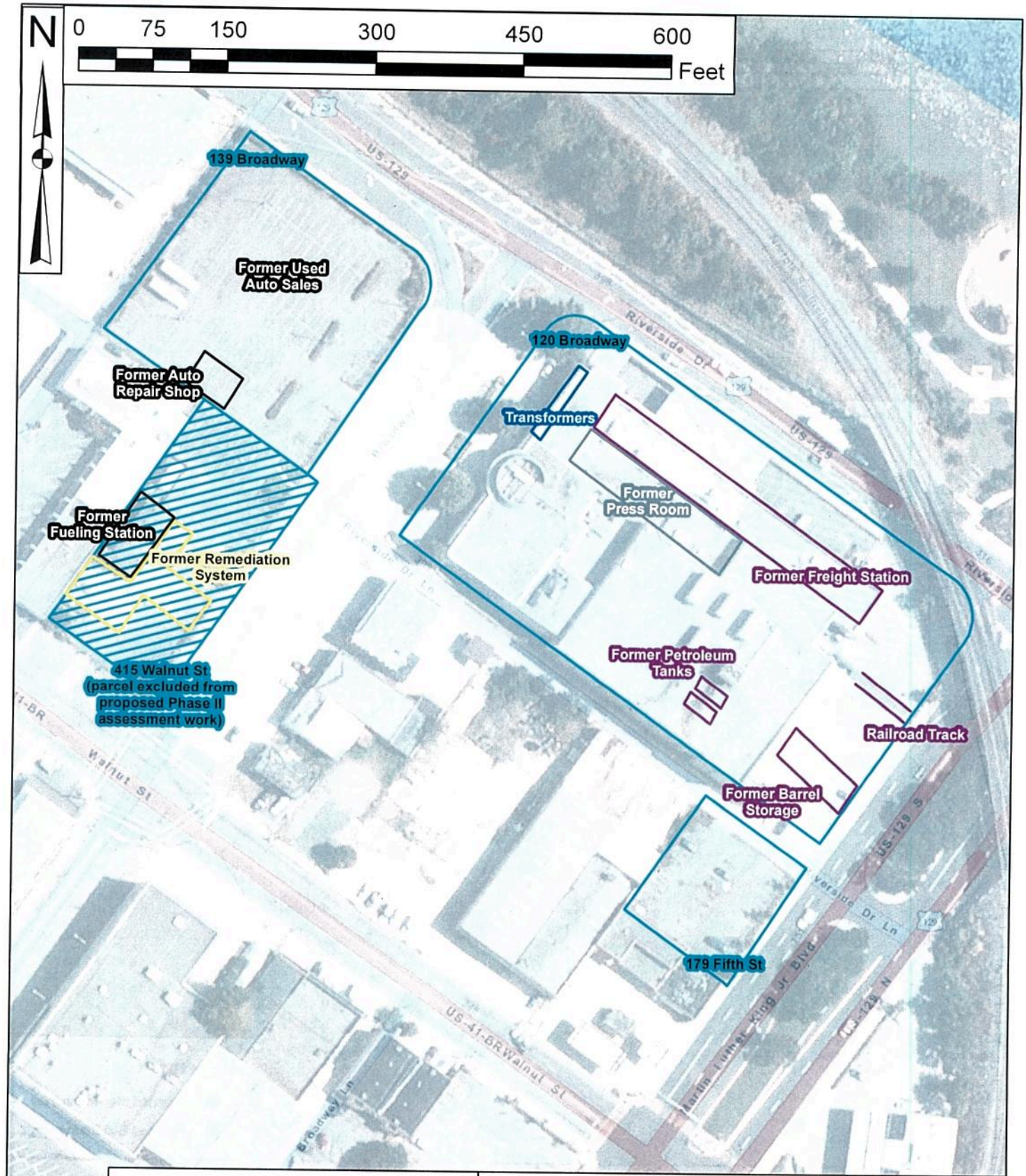
PROJECT ORGANIZATION CHART

ATTACHMENT A
PROJECT ORGANIZATION CHART

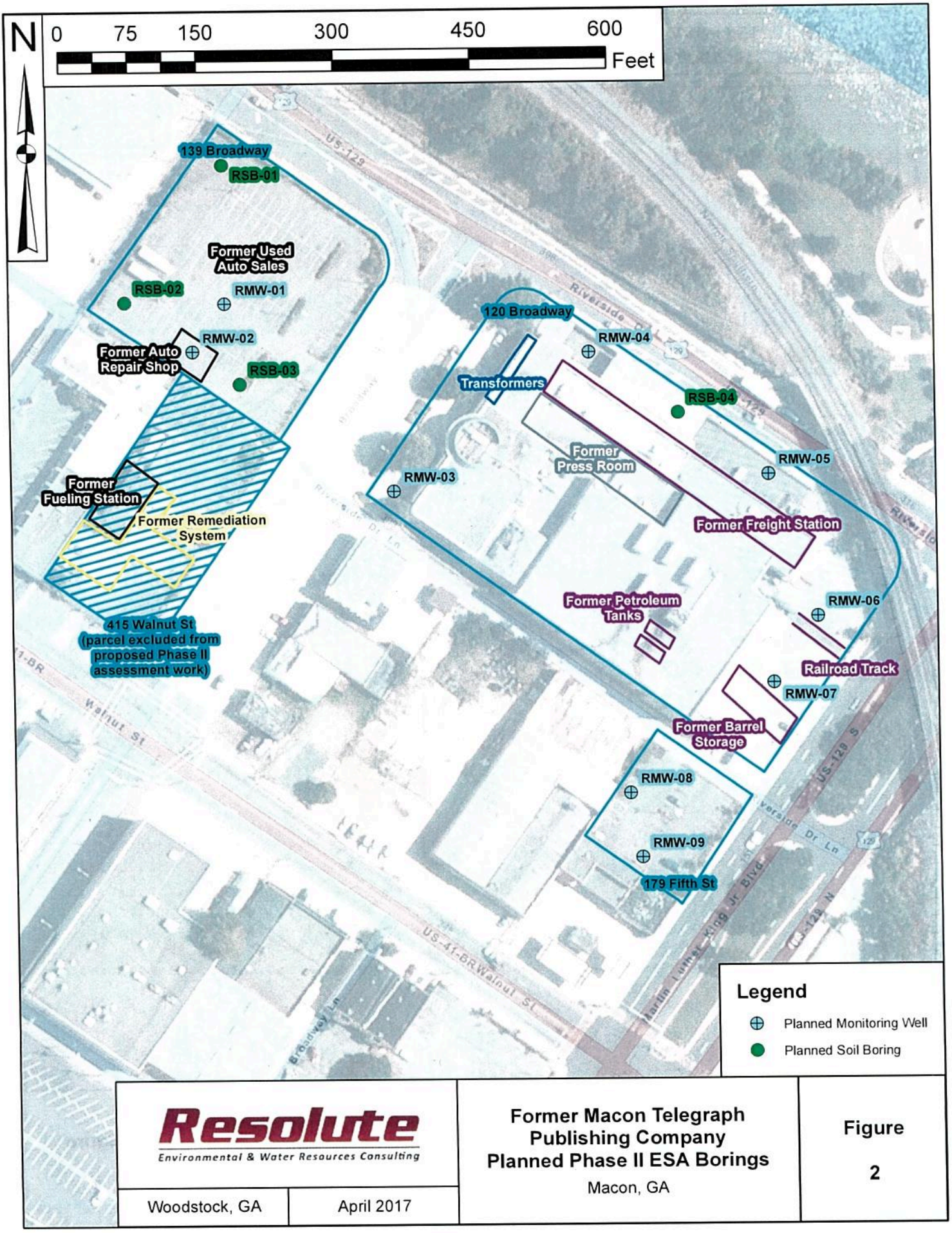


ATTACHMENT B

FIGURES



Resolute Environmental & Water Resources Consulting		Former Macon Telegraph Publishing Company Site Location Macon, GA	Figure 1
Woodstock, GA	April 2017		



Resolute
Environmental & Water Resources Consulting

Former Macon Telegraph Publishing Company
Planned Phase II ESA Borings
Macon, GA

Figure
2

Woodstock, GA | April 2017

ATTACHMENT C

SIGNED ELIGIBILITY VERIFICATION

MACONBIBB

EPA R4 BROWNFIELDS GRANT SITE ELIGIBILITY DETERMINATION

To be used for determining site eligibility for Phase II Environmental Site Assessments and Cleanups.

A. GENERAL INFORMATION

1. Grantee/TBA Applicant Name: **Macon-Bibb County**

2. Grant/Applicant Type – circle one: **104k Assessment**, 104k RLF, 104k Cleanup, TBA

   Grant/TBA Number: **BF-00D32515-0**

3. Work to be conducted – circle one: **Phase II Assessment**, Cleanup under RLF Loan, Cleanup under RLF Sub grant, 104(k) Cleanup

4. How much funding do you anticipate spending on the site?
   $30,000 -$60,000 for Phase II ESA and possible funding to prepare a GA Brownfield program application and Prospective Purchaser Corrective Action Plan (PPCAP).

   Please note - for assessments, you may spend no more than $200,000 per site, with the possibility of a waiver for up to $350,000. For cleanups, you may spend no more than $200,000 per site.

5. Date of proposed work: **Q1 2017 to Q3 2017**

6. **Keith J. Ziobron, P.E.**
   Principal Engineer
   Resolute Environmental & Water Resources Consulting, LLC **March 7, 2017**
   (Name and title of person completing the form) Date
   Keith.Ziobron@ResoluteEnv.com
   678-787-9576

B. BASIC SITE INFORMATION

1. Site Name: **Former Macon Telegraph Publishing Company & Adjacent Parking Lots**

2. Site Address (and County): **120 Broadway, 139 Broadway, 179 Fifth Street, Macon, Bibb County, Georgia 31201. It should be noted that 415 Walnut Street was included in the Phase I ESA. However, it has been excluded from this eligibility determination, as the petroleum release on that property has been addressed to the satisfaction of GA EPD. See attached Figure 1.**

3. Who is the current owner of the site? **120 Macon MRP LLC, % WhiteStar Advisors LLC, 902 Clint Moore Rd #220, Boca Raton, FL 33487-2828. Phone: 561-999-9949**

4. Describe grantee's or applicant's relationship with the owner, and the owner's role in the work to be performed: **Macon-Bibb County has no direct relationship with the owner. The site falls within the County's grant focus area, and was identified as a key property in downtown Macon. The owner signed an access agreement for the Phase I ESA which has been completed and provided to EPA. The goal is to complete a Phase II ESA to eliminate or limit future impacts, verify that the site has been adequately characterized, and potentially transition the site into the State Brownfield Cleanup Program. The portion of the site (415 Walnut Street) known to be impacted by petroleum (see Figure 1) will be excluded from any intrusive investigation activities. As noted, the petroleum release on 415 Walnut Street was addressed to the satisfaction of GA EPD.**

5. Known or Suspected Contaminant(s) (check one): for a discussion of what constitutes a Hazardous Substances site versus a Petroleum site, and for instructions on how to address a site where both contaminants are present, please see **"INSTRUCTIONS FOR COMPLETING SECTIONS E AND F."**

   ☐ Hazardous Substances (Complete Section E) - this includes hazardous substance sites that may also have relatively insignificant petroleum contaminants present

   ☐ Petroleum Contaminants (Complete Section F) - this includes petroleum sites that may also have relatively insignificant hazardous substances present

   ☑ Hazardous Substances and Petroleum (Complete both Section E and F) – please see **"INSTRUCTIONS FOR COMPLETING SECTIONS E AND F"** which begin at the bottom of page 3.

   ☐ Mine Scarred Lands

   ☐ Controlled Substances

6. Identify when and how the site became contaminated; describe previous known uses. If the land has been vacant for many years, why does the grantee/applicant think that it is contaminated?
   The former fueling station portion of the site (415 Walnut Street) was listed on Leaking Underground Storage Tank (LUST) and Underground Storage Tank (UST) cleanup inventories in 2002. Associated benzene groundwater contamination was addressed with a soil vapor extraction (SVE) & air sparge system. The final year the site was listed as "active" on the state LUST list was 2012. Additional historical site uses, however, dating back nearly a century and including the former auto repair shop, former freight station, former Macon Telegraph printing operations, together with likely off-site sources of contamination suggest potential for the current presence of soil, groundwater, and/or vapor encroachment. As a result it is proposed that the Phase II environmental assessment activities be conducted relative to the properties referenced in the response to question B.1.

7. Does the site meet the definition of a Brownfields Site? (Is the site "real property, the

expansion, redevelopment or reuse of which is complicated by the presence or potential presence of hazardous substances, pollutants or contaminants?")

☑ YES ☐ NO (If the response is "NO", the site is ineligible, stop here)

C. SITES NOT ELIGIBLE FOR FUNDING BY STATUTE

The grantee/applicant must supply the following information to the best of their knowledge:

1. Is the facility listed (or proposed for listing) on the National Priorities List?
   ☐ YES ☑ NO

2. Is the facility subject to unilateral administrative orders, court orders, administrative orders on consent, or judicial consent decrees issued to or entered into by parties under CERCLA?
   ☐ YES ☑ NO

3. Is the facility subject to the jurisdiction, custody, or control of the US government? (Land held in trust by the US government for an Indian tribe is eligible.)
   ☐ YES ☑ NO

*Note: If the answer is YES to any of the above (C.1-3) the property is **not** eligible, stop here.*

D. SITES ONLY ELIGIBLE FOR FUNDING WITH A PROPERTY SPECIFIC DETERMINATION BY EPA:

Certain properties can only be approved with a Property Specific Determination by EPA. The grantee/applicant must provide answers to the following questions to the best of their knowledge:

1. Is the site/facility subject to a planned or ongoing CERCLA removal action?
   ☐ YES ☑ NO

2. Has the site/facility been the subject of a unilateral administrative order, court order, an administrative order on consent or judicial consent decree that has been issued to or entered into by the parties, or been issued a permit by the U.S. or an authorized state under the Solid Waste Disposal Act (as amended by the Resource Conservation and Recovery Act (RCRA)), the Federal Water Pollution Control Act (FWPCA), the Toxic Substances Control Act (TSCA), or the Safe Drinking Water Act (SWDA)?
   ☐ YES ☑ NO

3. Is the site/facility subject to corrective action orders under RCRA (sections 3004(u) or 3008(h)) and has there been a corrective action permit or order issued or modified to require corrective measures?
   ☐ YES ☑ NO

4. Is the site/facility a land disposal unit that has submitted a RCRA closure notification under subtitle C of RCRA and is subject to closure requirements specified in a closure plan or permit?

☐ YES ☑ NO

5. Has the site/facility had a release of polychlorinated biphenyls (PCBs) that is subject to remediation under TSCA?
   ☐ YES ☑ NO

6. Has the site/facility received funding for remediation from the leaking Underground Storage Tank (LUST) Trust Fund?
   ☐ YES ☑ NO

Note: If the answer is YES to any of the above (D. 1-6), a property specific determination is required. The grantee or TBA applicant must complete the remaining applicable portions of this outline and submit additional information, as outlined in Appendix A to this document.

INSTRUCTIONS FOR COMPLETING SECTIONS E AND F

A site can have one of four conditions for purposes of Brownfields funding classifications – it may be a (1) hazardous substance site, (2) a petroleum site, (3) a site where there exists both hazardous substances and petroleum distributed in such a manner as to be too difficult to apportion the assessment or cleanup between the two media, and (4) a site containing both hazardous and petroleum where the contaminants are distinct and separate. These distinctions are important and determine which EPA Brownfields funds are legally permitted to be used in the assessment and/or cleanup processes.

1. A hazardous substances site can only be assessed and/or cleaned up using hazardous substance funds.
   If the site is primarily contaminated with hazardous substances, **complete Section E**. There may also be some minimal petroleum contamination present. "Minimal" petroleum contamination suggests there were no UST or AST installations at the property. There may be, or may have been, small hydraulic lifts used for automotive repair, or hydraulic elevators. Operations may have resulted in spills of small quantities of fuels, lubricating oils and there may be abandoned, oil-filled transformers or other oil-filled equipment at the site. The petroleum contamination is minimal and the site should be considered to be a hazardous substances site. It does not matter if the nominal petroleum contamination is commingled or segregated, the site should be considered to be a hazardous substance site and the applicant should **complete Section E for Hazardous Substances sites.**

2. A petroleum site can only be assessed and/or cleaned up using petroleum funds.
   A site with unused petroleum product remaining in underground and/or aboveground tanks and/or where petroleum product has been released from tanks, drums, piping, dispensers, railcars, or tank trucks to the environment is a petroleum site and the applicant should **complete Section F**. This is typically the case where there are or have been AST or UST installations. There may also be some minimal hazardous substance contamination remaining on site. "Minimal" hazardous substance contamination suggests that former site operations did not include significant commercial or industrial processes that could have resulted in large quantities or widespread hazardous substance contamination. There may be relatively small

quantities of hazardous substance contamination resulting from spilled cleaning solvents, lead-based paints, asbestos-containing materials such as floor tiles or dry wall joint compound, and so forth. It does not matter if the nominal hazardous substance contamination is commingled or segregated, the site should be considered to be petroleum contaminated and the applicant should **complete Section F for Petroleum Contamination Sites.**

3. A site containing both hazardous substances and petroleum contamination, where they are indivisible (or nearly so) for purposes of assessment and/or cleanup must be considered a hazardous substances site for purposes of funding and the applicant should **complete Section E**. This is often called a "commingled" site because the contaminants are commingled and not readily separated for purposes of assessment and/or cleanup.

   A commingled site is characterized by the presence of both hazardous substances and petroleum contaminants in such a manner that they cannot be readily separated for purposes of assessment and/or cleanup. This is often the case where the facility used or stored oil products and also used or generated hazardous substances in relatively close proximity so that releases of these contaminants became more or less a common contaminant. **These properties must be addressed as a hazardous substances site and the applicant should complete Section E for Hazardous Substances Sites.**

4. And finally, a site where there are both hazardous substances and petroleum contamination but where the location and distribution of sources and contamination are distinct and lend themselves to ready assessment and/or cleanup is a site where both hazardous substances and petroleum funding can be used on their respective sources and contamination and the applicant should **complete both Sections E and F**.

   Many sites have experienced releases of hazardous substances and petroleum products but these releases may be separated by distance and/or by operations which took place at the facility. There may be an above ground tank farm on one portion of the site, underground storage tanks in another area, and hazardous substances handled or generated or released in yet other areas. The key point here is that the contaminants are separate and may be assessed and/or cleaned up independent of one another. Applicants with a property where the contaminants are readily defined and segregable must complete **both sections E and F**.

E. HAZARDOUS SUBSTANCE SITES *(for Petroleum only sites, skip to F)*

1. Does the grantee/applicant own the site?
   ☐ YES ☑ NO

2. Answer the following if the grantee/applicant *is the current site owner.* (If the grantee/applicant is not the current site owner, skip to 3)**:**
   a. Is the owner a
      ☐ Unit of State or Local Government, or ☐ Other

   b. If the owner is a governmental unit, how was the property acquired?
      ☐ Tax Foreclosure ☐ Donation ☐ Eminent Domain ☐ Bought it outright
      ☐ Other (Explain):
      Date acquired: _____

c. Do they have a defense to CERCLA liability? (see most recent ARC Guidelines)

1. Involuntary Acquisition such as Bankruptcy, tax delinquency, abandonment, or similar circumstances?

☐ YES ☐ NO

2. Bona Fide Prospective Purchaser (BFPP) - Did the owner conduct Pre-Purchase Inquiry (EPA All Appropriate Inquiry, ASTM standards, or other) prior to acquiring property?

☐ YES ☐ NO

3. Did the owner take reasonable steps with regards to the contamination at the site?

☐ YES ☐ NO

4. Contiguous Property Owner

☐ YES ☐ NO

5. Third Party or Innocent Land Owner

☐ YES ☐ NO

6. Indian Tribe

☐ YES ☐ NO

d. Are they liable at the site as an Operator, Arranger, or Transporter?

☐ YES, or ☐ None Applicable

e. Did the disposal of all hazardous substances at the site occur before they acquired the property?

☐ YES ☐ NO

f. Did they cause or contribute to any release of hazardous substances at the site?

☐ YES ☐ NO

3. Answer the following if the grantee/applicant *is not the site owner*:

a. Is the grantee/applicant potentially liable at the site as an:

☐ Operator ☐ Arranger, or ☐ Transporter? **Not Applicable**

b. Is the grantee/applicant affiliated with the site owner (familial, contractual, financial)?

☐ YES ☑ NO

F. PETROLEUM CONTAMINATION SITES (*Petroleum sites need a written site eligibility determination by the state or EPA. This letter indicates that the site presents a low priority for the expenditure of State LUST funds or Federal Oil Pollution Act funds for assessment, cleanup or enforcement activities at this site.)*

1. If the state *has made* the petroleum eligibility determination, the grantee/applicant must provide EPA with the letter from the state.

2. If the state *was unable to make* the determination, EPA must make the determination consistent with the Guidelines (note that EPA staff will need to refer to the most recent ARC Guidelines to conduct the petroleum determination). The grantee/applicant must

provide information regarding the following:

a. Whether the site is of "relatively low risk" compared with other "petroleum-only" sites in the state. Key questions for this determination follow:
1. Have Leaking Underground Storage Tank funds been expended at this site?
☐ YES ☑ NO **As noted above, 415 Walnut Street is excluded from the scope of the proposed Phase II environmental Assessment**

2. Have Federal Oil Pollution Act response funds been expended at this site?
☐ YES ☑ NO

b. Whether there is a viable responsible party at the site. Key questions for this determination follow:
1. Was the site last acquired through tax foreclosure, abandonment or equivalent government proceedings?
☐ YES ☑ NO

If the site was acquired through tax foreclosure, abandonment or equivalent government proceedings, skip to F.2.b.5. below. If not, continue responding.

2. Has a responsible party been identified through:
i) a judgment rendered in a court of law or an administrative order that would require any party to assess, investigate, or cleanup the site;
☐ YES, ☑ NO, or

ii) a filed enforcement action brought by federal or state authorities that would require any party to assess, investigate, or cleanup the site;
☑ YES, ☐ NO, or

iii) a citizen suit, contribution action or other third party claim against the current or immediate past owner, that would, if successful, require that party to assess, investigate, or clean up the site?
☐ YES ☑ NO

3. The current owner is: **120 Macon MRP LLC % WhiteStar Advisors LLC.**
Has the current owner:
i) dispensed or disposed of petroleum or petroleum product at the site?
☐ YES ☑ NO

ii) owned the property during the dispensing or disposal of petroleum product at the site?
☐ YES ☑ NO

iii) exacerbated the contamination at the site?
☐ YES ☑ NO

iv) taken reasonable steps with regard to contamination at the site,

☑ YES ☐ NO

4. The immediate past owner is: **Macon Telegraph Publishing Company**
Has the immediate past owner:
i) dispensed or disposed of petroleum or petroleum product at the site?
☐ YES ☑ NO **As noted, 415 Walnut Street has been excluded from the scope of the proposed Phase II Environmental Assessment.**

ii) owned the property during the dispensing or disposal of petroleum product at the site?
☐ YES ☑ NO **As noted, 415 Walnut Street has been excluded from the scope of the proposed Phase II Environmental Assessment.**

iii) exacerbated the contamination at the site?
☐ YES ☑ NO **As noted, 415 Walnut Street has been excluded from the scope of the proposed Phase II Environmental Assessment.**

iv) taken reasonable steps with regard to contamination at the site,
☑ YES ☐ NO

5. Based on the above, for purposes of Brownfields funding, is there a responsible party?
☐ YES ☑ NO *If "YES" go on to F.2.b.6; if "NO" proceed directly to F.3.*

6. If there is a responsible party, is that party viable (has adequate financial resources to pay for assessment of the site).
☐ YES ☑ NO *If "NO", explain the basis for that conclusion:*
As noted, 415 Walnut Street has been excluded from the scope of the proposed Phase II Environmental Assessment. The source of any potential petroleum impacts on 120 Broadway, 139 Broadway, and 179 Fifth Street would likely pre-date ownership by 120 Macon MRP LLC or Macon Telegraph.

If there is a viable responsible party, the petroleum site is ineligible. If there is no responsible party, or if there is a responsible party who is not viable, continue. NOTE: States may apply their own laws and regulations to make the petroleum site determination instead of the previous questions; if they do so, the grantee/applicant must submit those determination and rationale.

3. Whether the grantee/applicant is potentially liable for cleaning up the site. Key questions for this determination follow:

a. Has the grantee/applicant ever:

1. dispensed or disposed of petroleum or petroleum product at the site, or owned the property during the dispensing or disposing of petroleum?
☐ YES ☑ NO

2. exacerbated the contamination at the site?

☐ YES ☑ NO

b. Is the site subject to any order issued under Sec. 9003(h) of the Solid Waste Disposal Act?
☐ YES ☑ NO

H. ACCESS

Does grantee/applicant have access or an access agreement for this property?
☑ YES ☐ NO

I. SITE ELIGIBILITY DETERMINATION BY EPA PROJECT OFFICER

Please Note: If there are any questions on eligibility, OR if the grantee/applicant owns the site it wishes to work on, the P.O. should consult with the Regional Brownfields Coordinator, and as necessary EPA legal counsel.

☒ SITE IS/☐ SITE IS NOT eligible for site assessment activities using EPA Brownfields Funds

-- OR --

☐ SITE IS eligible but requires an EPA Property-Specific Determination, for which additional information was provided.

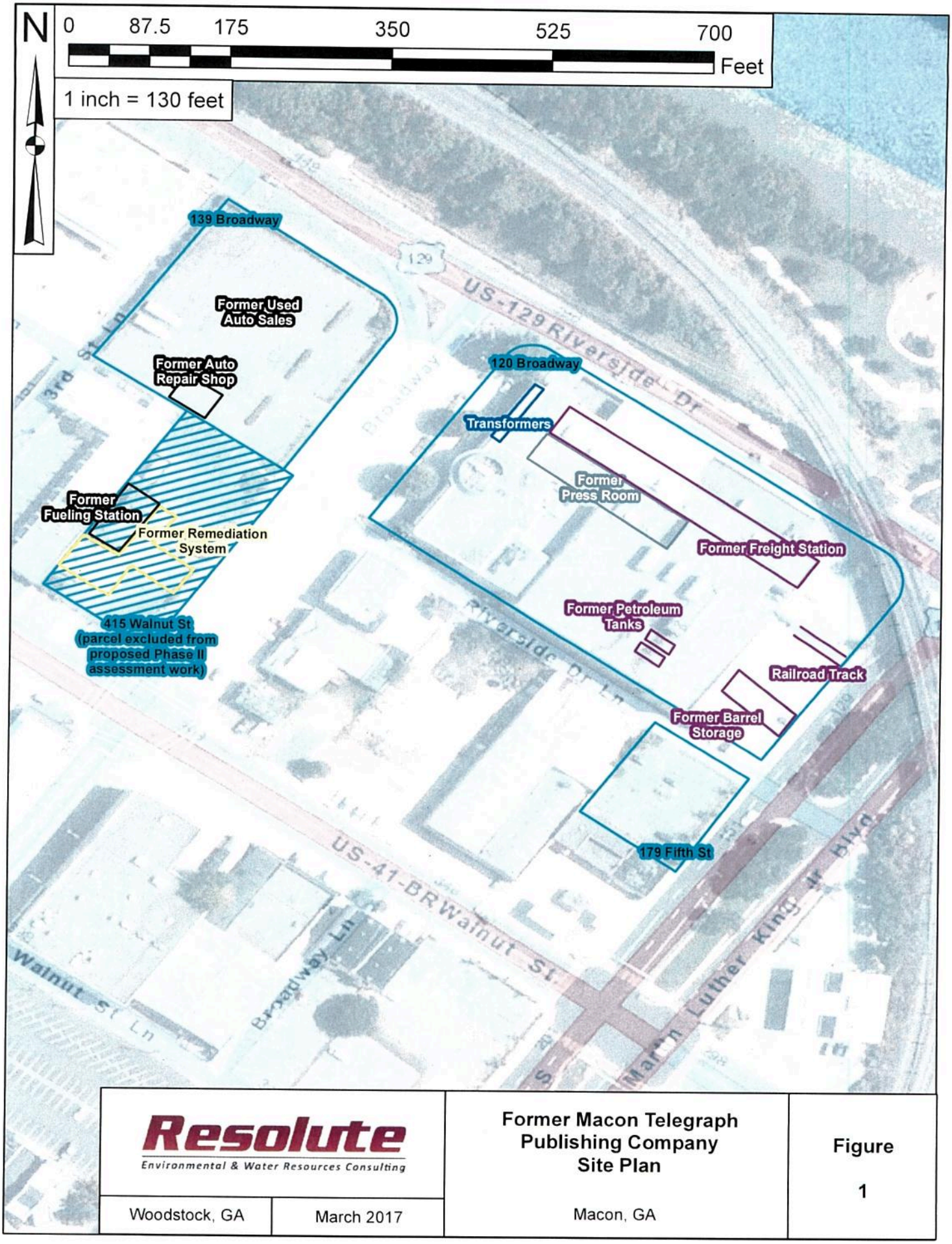
Bushra Jawaid _____ 3/17/17 _____
EPA Project Officer Date:

J. EPA NOTIFICATION TO APPLICANT OF SITE ELIGIBILITY

Date Sent: 3/17/17 Copy of Notification Attached: ☐ YES ☒ NO

APPENDIX A: [IF REQUIRED] INFORMATION TO SUPPORT PROPERTY SPECIFIC DETERMINATION by EPA

Grantee/applicant must explain why Brownfields financial assistance is needed and how it will protect human health and the environment and either promote economic development or enable the creation of, preservation of, or addition to parks, greenways undeveloped property, other recreational property, or other property used for nonprofit purposes.



Resolute
Environmental & Water Resources Consulting

Woodstock, GA | March 2017

Former Macon Telegraph Publishing Company Site Plan

Macon, GA

Figure 1

ATTACHMENT D

PROJECT SCHEDULE

ATTACHMENT D
PROJECT SCHEDULE

Activity	Start	Complete	Duration (days)
QAPP Submittal to EPA	13-Apr-17	27-Apr-17	14
Address EPA Comments & Final Submission/Approval	27-Apr-17	4-May-17	7
Scheduling of Field Work/Subcontractor Selection	4-May-17	7-May-17	3
Field Work	8-May-17	18-May-17	8
Laboratory Analysis Time	18-May-17	28-May-17	10
Report Preparation	28-May-17	27-Jun-17	30
Final Submittal	27-Jun-17	28-Jun-17	1

ATTACHMENT E

EPA REGION 4 SOP SESDGUID-101-R1: Design and Installation of Monitoring Wells

COPY

Region 4 **U.S. Environmental Protection Agency** **Science and Ecosystem Support Division** **Athens, Georgia**
GUIDANCE
Title: **Design and Installation of Monitoring Wells**
Effective Date: January 29, 2013 | **Number:** SESDGUID-101-R1
Authors
Name: Brian Striggow Title: Environmental Engineer Signature: Date: 1-22-13
Approvals
Name: Danny France Title: Chief, Enforcement and Investigations Branch Signature: Date: 1-22-13
Name: Bobby Lewis Title: Field Quality Manager, Science and Ecosystem Support Division Signature: Date: 1/22/13

Revision History

This table shows changes to this controlled document over time. The most recent version is presented in the top row of the table. Previous versions of the document are maintained by the SESD Document Control Coordinator.

History	Effective Date
SESDGUID-101-R1, *Design and Installation of Monitoring Wells*, replaces SESDPROC-101-R0. **General:** Corrected any typographical, grammatical and/or editorial errors. **Cover Page:** The Enforcement and Investigations Branch Chief was changed from Antonio Quinones to Danny France. The FQM was changed from Laura Ackerman to Bobby Lewis. **Section 1.2:** Added the following statement: Mention of trade names or commercial products does not constitute endorsement or recommendation for use. **Section 1.3:** Omitted the reference to the H: drive of the LAN. **Section 1.4:** Replaced the "SESD Operating Procedure for Field Records and Documentation, SESDPROC-204-Most Recent Version" with its updated version, the "SESD Operating Procedure for Logbooks, SESDPROC-010, Most Recent Version. **Section 1.5.1:** Updated the SHEMP Manual reference to reflect that the most recent version of the Manual will be used. **Section 1.5.2:** On the second bullet, replaced the reference with the "SESD Operating Procedure for Logbooks (SESDPROC-010)."	January 29, 2013
SESDGUID-101-R0, *Design and Installation of Monitoring Wells*, Original Issue	February 18, 2008

TABLE OF CONTENTS

1 General Information

1.1 Purpose

This document describes general and specific procedures, methods and considerations to be used and observed when designing and installing permanent and temporary groundwater monitoring wells to be used for collection of groundwater samples.

1.2 Scope/Application

The procedures contained in this document are to be used by field personnel when designing, constructing and installing groundwater monitoring wells. On the occasion that SESD field personnel determine that any of the procedures described in this section are either inappropriate, inadequate or impractical and that another procedure must be used for any aspect of the design, construction and/or installation of a groundwater monitoring well, the variant procedure will be documented in the field log book, along with a description of the circumstances requiring its use. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

1.3 Documentation/Verification

This procedure was prepared by persons deemed technically competent by SESD management, based on their knowledge, skills and abilities and has been tested in practice and reviewed in print by a subject matter expert. The official copy of this procedure resides on the SESD local area network (LAN). The Document Control Coordinator is responsible for ensuring the most recent version of the procedure is placed on the LAN and for maintaining records of review conducted prior to its issuance.

1.4 References

USEPA Region 4 Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM), November 2001

USEPA. Safety, Health and Environmental Management Program Procedures and Policy Manual. Science and Ecosystem Support Division, Region 4, Athens, GA, Most Recent Version

SESD Operating Procedure for Field Sampling Quality Control, SESDPROC-011, Most Recent Version

SESD Operating Procedure for Field Equipment Cleaning and Decontamination, SESDPROC-205, Most Recent Version

SESD Operating Procedure for Logbooks, SESDPROC-010, Most Recent Version

SESD Operating Procedure for Groundwater Sampling, SESDPROC-301, Most Recent Version

SESD Operating Procedure for Management of Investigation Derived Waste, SESDPROC-202, Most Recent Version

EPA/540/S-95/503, *Nonaqueous Phase Liquids Compatibility with Materials Used in Well Construction, Sampling, and Remediation*

ASTM standard D5092, *Design and Installation of Ground Water Monitoring Wells in Aquifers*

1.5 General Precautions

1.5.1 Safety

Proper safety precautions must be observed when constructing and installing groundwater monitoring wells. Refer to the SESD Safety, Health and Environmental Management Program Procedures and Policy (SHEMP) Manual (Most Recent Version) and any pertinent site-specific Health and Safety Plans (HASPs) for guidelines on safety precautions. These guidelines should be used to complement the judgment of an experienced professional. When using this procedure, minimize exposure to potential health hazards through the use of protective clothing, eye wear and gloves. Address chemicals that pose specific toxicity or safety concerns and follow any other relevant requirements, as appropriate. Section 2.6, Safety Procedures for Drilling Activities, contains detailed and specific safety guidelines that must be followed by Branch personnel when conducting activities related to monitoring well construction and installation.

1.5.2 Procedural Precautions

The following precautions should be considered when constructing and installing groundwater monitoring wells.

- Special care must be taken to minimize or prevent inadvertent cross-contamination between borehole locations. Equipment, tools and well materials must be cleaned and/or decontaminated according to procedures found in SESD Operating Procedure for Field Equipment Cleaning and Decontamination (SESDPROC-205).
- All field activities are documented in a bound logbook according to the procedures found in SESD Operating Procedure for Logbooks (SESDPROC-010).

2 Permanent Monitoring Well Design Considerations

2.1 General

The design and installation of permanent monitoring wells involves drilling into various types of geologic formations that exhibit varying subsurface conditions. Designing and installing permanent monitoring wells in these geologic environments may require several different drilling methods and installation procedures. The selection of drilling methods and installation procedures should be based on field data collected during a hydrogeologic site investigation and/or a search of existing data. Each permanent monitoring well should be designed and installed to function properly throughout the duration of the monitoring program. When designing monitoring wells, the following should be considered:

- Short-and long-term objectives;
- Purpose of the well(s);
- Probable duration of the monitoring program;
- Contaminants likely to be monitored;
- Surface and subsurface geologic conditions;
- Properties of the aquifer(s) to be monitored;
- Well screen placement;
- General site conditions; and
- Potential site health and safety hazards.

In designing permanent monitoring wells, the most reliable, obtainable data should be utilized. Once the data have been assembled and the well design(s) completed, a drilling method(s) must be selected. The preferred drilling methods for installing monitoring wells are those that temporarily case the borehole during drilling and the construction of the well, e.g. hollow-stem augers and sonic methods. However, site conditions or project criteria may not allow using these methods. When this occurs, alternate methods should be selected that will achieve the project objectives. The following discussion of methods and procedures for designing and installing monitoring wells will cover the different aspects of selecting materials and methods, drilling boreholes, and installing monitoring devices.

2.2 Drilling Methods

The following drilling methods may be used to install environmental monitoring wells or collect samples under various subsurface conditions. In all cases the preferred methods are those that case the hole during drilling, i.e. Hollow Stem Augers (HSA) and sonic methods using an override system. Other methods may be used where specific subsurface or project criteria dictate.

2.2.1 Hollow Stem Auger (HSA)

This type of auger consists of a hollow, steel stem or shaft with a continuous, spiraled steel flight, welded onto the exterior. A hollow auger bit, generally with carbide teeth, disturbs soil material when rotated, whereupon the spiral flights transport the cuttings to the surface. This method is best suited in soils that have a tendency to collapse when disturbed. A monitoring well can be installed inside of hollow-stem augers with little or no concern for the caving potential of the soils. If caving sands exist during monitoring well installations, a drilling rig must be used that has enough power to extract the augers from the borehole without having to rotate them. A bottom plug, trap door, or pilot bit assembly can be used at the bottom of the augers to keep out most of the soils and/or water that have a tendency to enter the bottom of the augers during drilling. Potable water (analyzed for contaminants of concern) may be poured into the augers during drilling to equalize pressure so that the inflow of formation materials will be held to a minimum. Water-tight center bits are not acceptable because they create suction when extracted from the augers. This suction forces or pulls cuttings and formation materials into the augers, defeating the purpose of the center plug. Augering without a center plug or pilot bit assembly is permitted, provided that the soil plug, formed in the bottom of the augers, is removed before sampling or installing well casings. Removing the soil plug from the augers can be accomplished by drilling and washing out the plug using a rotary bit, or augering out the plug with a solid-stem auger bit sized to fit inside the hollow-stem auger. Bottom plugs can be used where no soil sampling is conducted during the drilling process. The bottom plug is wedged into the bottom of the auger bit and is knocked out at depth with drill pipe or the weight of the casing and screen assembly. The plug material should be compatible with the screen and casing materials. The use of wood bottom plugs is not acceptable. The type of bottom plug, trap door, or pilot bit assembly proposed for the drilling activity should be approved by a senior field geologist prior to drilling operations. Boreholes can be augered to depths of 150 feet or more (depending on the auger size), but generally boreholes are augered to depths less than 100 feet.

2.2.2 Solid Stem Auger

This type of auger consists of a sealed hollow or solid stem or shaft with a continuous spiraled steel flight welded on the outside of the stem. An auger bit connected to the bottom disturbs soil material when rotated and the helical flights transport cuttings to the surface. At the desired depth the entire auger string is removed to gain access to the bottom of the borehole. This auger method is used in cohesive and semi-cohesive soils that do not have a tendency to collapse when disturbed. Boreholes can be augered to depths of 200 feet or more (depending on the auger size), but generally boreholes are augered to depths less than 100 feet.

Both of the previously discussed auger methods can be used in unconsolidated soils and semi-consolidated (weathered rock) soils, but not in competent rock.

Each method can be employed without introducing foreign materials into the borehole such as water and drilling fluids, minimizing the potential for cross contamination. Minimizing the risk of cross contamination is one of the most important factors to consider when selecting the appropriate drilling method(s) for a project.

2.2.3 Sonic Methods

These methods generally alternately advance concentric hollow drill stems using rotation in conjunction with axial vibration of the drill stem. After each stage of drill stem advancement, the inner string is removed with a core of drill cuttings while the outer 'override' string remains to hold the borehole open. The cuttings can be removed nearly intact from the inner casing for examination of the stratigraphy prior to sampling or disposal. Because there are no auger flights to increase the borehole diameter, the quantity of cuttings removed from the hole is minimized as compared to hollow stem augering. With moderate rotation, smearing of the formation materials on the borehole walls is reduced as well. This drilling method is useful in a variety of materials, from flowing sands to heavily consolidated or indurated formations.

In flowing sands, the drill casings can be filled and/or pressurized with potable water to prevent excess entry of formation materials into the drill string. The same QA/QC requirements for sampling of material introduced to the borehole apply as in other drilling methods. Because the amount of water introduced into the borehole can be significant, an approximation of the water used in the drilling process should be logged for use in estimating appropriate well development withdrawal.

Sonic drilling allows a larger diameter temporary casing to be set into a confining layer while drilling proceeds into deeper aquifers. This temporary casing is then removed during the grouting operation. In many cases this will be acceptable technique. However, the level of contamination in the upper aquifer, the importance of the lower aquifers for drinking water uses, the permeability and continuity of the confining layer, and state regulations should be taken into account when specifying this practice as opposed to permanent outer casing placed into the confining unit. Note that when using the temporary casing practice, it is critical that grout be mixed and placed properly as specified elsewhere in this section.

Because the total borehole diameter in sonic drilling is only incrementally larger than the inner casing diameter, particular care should be taken that the well casing is placed in the center of the drill stem while placing the filter pack. Centralizers should be used in most cases to facilitate centering, particularly in the case of deep wells with PVC casing.

2.2.4 Rotary Methods

These methods consist of a drill pipe or drill stem coupled to a drilling bit that rotates and cuts through the soils. The cuttings produced from the rotation of the drilling bit are transported to the surface by drilling fluids which generally consist of water, drilling mud, or air. The water, drilling mud, or air are forced down through the drill pipe, and out through the bottom of the drilling bit. The cuttings are then lifted to the surface between the borehole wall and the drill pipe, (or within a concentric drill stem in reverse rotary). Except in the case of air rotary, the drilling fluid provides a hydrostatic pressure that reduces or prevents borehole collapse. When considering this method, it is important to evaluate the potential for contamination when fluids and/or air are introduced into the borehole.

Due to the introduction of the various circulating fluids, the use of rotary methods requires that the potential for contamination by these fluids be evaluated. Water and mud rotary methods present the possibility of trace contamination of halogenated compounds when municipal water supplies are used as a potable water source. Air rotary drilling can introduce contamination through the use of lubricants or entrained material in the air stream. Unless contaminated formations are cased off, the circulation of drilling fluids presents a danger of cross contamination between formations. In any of the rotary (or sonic) methods, care must be exercised in the selection and use of compounds to prevent galling of drill stem threads.

2.2.4.1 Water Rotary

When using water rotary, potable water (that has been analyzed for contaminants of concern) should be used. If potable water (or a higher-quality water) is not available on-site, then potable water will have to be transported to the site or an alternative drilling method will have to be selected. Water does not clog the formation materials, but the suspended drilling fines can be carried into the formation, resulting in a very difficult to develop well. This method is most appropriate for setting isolation casing.

2.2.4.2 Air Rotary

Air rotary drilling uses air as a drilling fluid to entrain cuttings and carry them to the surface. High air velocities, and consequently large air volumes and compressor horsepower are required. "Down-the-hole" (DTH) percussion hammers driven by the air stream can be used with this method to rapidly penetrate bedrock materials. Where a casing through unconsolidated material is required to prevent borehole collapse, it can be driven in conjunction with advancement of the drill stem.

When using air rotary drilling in any zone of potential contamination, the cuttings exiting the borehole must be controlled. This can be done using

the dual-tube reverse circulation method where cuttings are carried to the surface inside dual-wall drill pipe and separated with a cyclone separator. An air diverter with hose or pipe carrying cuttings to a waste container is also an acceptable alternative. Allowing cuttings to blow uncontrolled from the borehole is not acceptable.

When using air rotary, the issue of contaminants being introduced into the borehole by the air stream must be addressed. Screw compressor systems should have a coalescing filter system in good working order to capture excess entrained compressor oils. The lubricant to be used with DTH hammers as well as thread lubricants to be used on drill stem should be evaluated for their potential impact on analytical samples.

2.2.4.3 Mud Rotary

Mud rotary is an undesirable drilling method because contamination can be introduced into the borehole from the constituents in the drilling mud, cross contamination can occur along the borehole column, and it is difficult to remove the drilling mud from the borehole after drilling and during well development. The drilling mud can also carry contaminates from a contaminated zone to an uncontaminated zone thereby cross-contaminating the borehole. If mud rotary is selected, only potable water and pure (no additives) bentonite drilling muds should be used. All materials used should have adequate documentation as to manufacturer's recommendations and product constituents. QA/QC samples of drilling muds and potable water should be sampled at a point of discharge from the circulation system to assure that pumps and piping systems are not contributing cross-contamination from previous use.

2.2.5 Other Methods

Other methods such as the cable-tool method, jetting method, and boring (bucket auger) method are available. If these and/or other methods are selected for monitoring well installations, they should be approved by a senior field geologist before field work is initiated.

2.3 Borehole Construction

2.3.1 Annular Space

The borehole or hollow stem auger should be of sufficient diameter so that well construction can proceed without major difficulties. For open boreholes, the annular space should be approximately 2" to allow the uniform deposition of well materials around the screen and riser, and to allow the passage of tremie pipes and well materials without unduly disturbing the borehole wall. For example, a 2" nominal diameter (nom.) casing would require a 6" inside diameter (ID) borehole.

In hollow stem augers and sonic method drill casing, the ID should be of sufficient size to allow the passage of the tremie pipe to be used for well grout placement, as well as free passage of filter sands or bentonite pellets dropped through the auger or casing. In general, 4-1/4" ID should be the minimum size used for placement of 2" nom. casing and 8-1/4" ID for 4" nom. casing. Larger augers should be used where installation difficulties due to geologic conditions or greater depths are anticipated, e.g. larger augers might be required to place a bentonite pellet seal through a long water column.

2.3.2 Over-drilling the Borehole

Sometimes it is necessary to over-drill the borehole in anticipation of material entering the augers during center bit removal or knocking out of the bottom plug. Normally, 3 to 5 feet is sufficient for over-drilling. The borehole can also be over-drilled to allow for an extra space or a "sump" area below the well screen. This "sump" area provides a space to attach a 5 or 10 foot section of well casing to the bottom of the well screen. The extra space or "sump" below the well screen serves as a catch basin or storage area for sediment that flows into the well and drops out of suspension. These "sumps" are added to the well screens when the wells are screened in aquifers that are naturally turbid and will not yield clear formation water (free of visible sediment) even after extensive development. The sediment can then be periodically pumped out of the "sump" preventing the well screen from clogging or "silting up". If the borehole is inadvertently drilled deeper than desired, it can be backfilled to the design depth with bentonite pellets, chips, or the filter sand that is to be used for the filter pack.

2.3.3 Filter Pack Placement

When placing the filter pack into the borehole, a minimum of 6-inches of the filter pack material should be placed under the bottom of the well screen to provide a firm base. Also, the filter pack should extend a minimum of 2-feet above the top of the well screen to allow for settling and to isolate the screened interval from the grouting material. In open boreholes, the filter pack should be placed by the tremie or positive displacement method. Placing the filter pack by pouring the sand into an open drill stem is acceptable with the use hollow stem augers, and other methods where the borehole is temporarily cased down to the filter pack.

2.3.4 Filter Pack Seal – Bentonite Pellet Seal (Plug)

Bentonite pellets consist of ground, dried bentonite compacted into pellets available in several sizes. Bentonite pellets are compressed to a bulk density of 70-80 lbs/ft^3 and hydrate to a 30% min. solids material. Where neat cement grouts are to be used, the placement of a bentonite pellet seal above the filter pack is mandatory to prevent the possibility of grout infiltration into the screened interval prior to setting. Bentonite chips or other sealing products should not be

substituted in this application. Where bentonite grouts are to be used, the placement of a bentonite pellet seal is optional, but desirable.

Since bentonite pellets begin hydrating rapidly, they can be very difficult to place properly. They are generally placed by pouring slowly into open boreholes, hollow stem augers or sonic drill pipe. In some cases, pellets are placed by tremie pipe and flushed into place with potable water. A tamper can be used to ensure that the material is being placed properly and to rapidly break up any pellet bridging that occurs.

Pellet seals should be designed for a two-foot thickness of dry pellets above the filter pack. Hydration may extend the height of the seal. Where neat cement grouts are to be used, the pellets should be hydrated for eight hours, or the manufacturer's recommended hydration time, whichever is greater. Where the water table is temporarily below the pellet seal, potable (or higher quality) water should be added repeatedly to hydrate the pellets prior to grouting.

2.3.5 Grouting the Annular Space

The annular space between the casing and the borehole wall should be filled with either a 30% solids bentonite grout, a neat cement grout, or a cement/bentonite grout. Each type of grout selected should be evaluated as to its intended use and integrity. Bentonite grouts are preferred unless the application dictates the use of another material.

Bentonite grout shall be a 30% solids pure bentonite grout. Drilling muds are not acceptable for grouting. The grout should be placed into the borehole, by the tremie method, from the top of the bentonite seal to within 2-feet of the ground surface or below the frost line, whichever is the greater depth. The bentonite pellet seal or filter pack should not be disturbed during grout placement, either by the use of a side discharge port on the tremie tube, or by maintaining clearance between the bottom of the tremie tube and the bentonite seal or filter pack. The grout should be allowed to cure for a minimum of 24 hours before the concrete surface pad is installed. The preferred method of achieving proper solids content is by measurement of ingredients per the manufacturer's specifications during mixing with a final check by grout balance after mixing. Bentonite grouts should have a minimum density of 10 lbs/gal to ensure proper gelling and low permeability. The density of the first batch of grout should be measured while mixing to verify proper measurement of ingredients. In addition, the grouting operation should not cease until the bentonite grout flowing out of the borehole has a minimum density of 10 lbs/gal. Estimating the grout density is not acceptable.

Cement grouts are generally dictated where a high level of dissolved solids or a particular dissolved constituent would prevent proper gelling of a bentonite grout. Neat cement grouts (cement without additives) should be mixed using 6 gallons of

water per 94-lb bag of Type 1 Portland cement to a density of 15lbs/gal. The addition of bentonite (5 to 10 percent) to the cement grout can be used to delay the "setting" time and may not be needed in all applications. The specific mixtures and other types of cement and/or grout proposed should be evaluated on a case by case basis by a senior field geologist.

2.3.6 Above Ground Riser Pipe and Outer Casing

The well casing, when installed and grouted, should extend above the ground surface a minimum of 2.5 feet. A vent hole should be drilled into the top of the well casing cap to permit pressure equalization, if applicable. An outer protective casing should be installed into the borehole after the annular grout has cured for at least 24 hours. The outer protective casing should be of steel construction with a hinged, locking cap. Generally, outer protective casings used over 2-inch well casings are 4 inches square by 5 feet long. Similarly, protective casings used over 4-inch well casings are 6 inches square and 5 feet long. Other types of protective casing including those constructed of pipe are also acceptable. All protective casings should have sufficient clearance around the inner well casings, so that the outer protective casings will not come into contact with the inner well casings after installation. The protective casings should have a weep hole to allow drainage of accumulated rain or spilled purge water. The weep hole should be approximately 1/4-inch in diameter and drilled into the protective casings just above the top of the concrete surface pad to prevent water from standing inside of the protective casings. Protective casings made of aluminum or other soft metals are normally not acceptable because they are not strong enough to resist tampering. Aluminum protective casing may be used in very corrosive environments such as coastal areas.

Prior to installing the protective casing, the bentonite grout in the borehole annulus is excavated to a depth of approximately two feet. The protective casing is installed by pouring concrete into the borehole on top of the grout. The protective casing is then pushed into the wet concrete and borehole a minimum of 2 feet. Extra concrete may be needed to fill the inside of the protective casing so that the level of the concrete inside of the protective casing is at or above the level of the surface pad. In areas where frost heave of the surface pad is possible, the protective casing should first be pressed into the top surface of the bentonite grout seal and concrete poured around the protective casing. A granular material such as sand or gravel can then be used to fill the space between the riser and protective casing. The use of granular material instead of concrete between the protective casing and riser will also facilitate the future conversion of the well to a flush-mount finish, if required. The protective casing should extend above the ground surface to a height so that the top of the inner well casing is exposed when the protective casing is opened. At each site, all locks on the outer protective casings should be keyed alike.

2.3.7 Concrete Surface Pad

A concrete surface pad should be installed around each well at the same time as the outer protective casing is being installed. The surface pad should be formed around the well casing. Concrete should be placed into the pad forms and into the borehole (on top of the grout) in one operation making a contiguous unit. The size of the concrete surface pad is dependent on the well casing size. If the well casing is 2 inches in diameter, the pad should be 3 feet x 3 feet x 4 inches. If the well casing is 4 inches in diameter, the pad should be 4 feet x 4 feet x 6 inches. Round concrete surface pads are also acceptable. The finished pad should be slightly sloped so that drainage will flow away from the protective casing and off of the pad. A minimum of one inch of the finished pad should be below grade to prevent washing and undermining by soil erosion.

2.3.8 Surface Protection – Bumper Guards

If the monitoring wells are located in a high traffic area, a minimum of three bumper guards consisting of steel pipes 3 to 4 inches in diameter and a minimum 5-foot length should be installed. These bumper guards should be installed to a minimum depth of 2 feet below the ground surface in a concrete footing and extend a minimum of 3 feet above ground surface. Concrete should also be placed into the steel pipe to provide additional strength. Substantial steel rails and/or other steel materials can be used in place of steel pipe. Welding bars between the bumper posts can provide additional strength and protection in high traffic areas, but the protective bumpers should not be connected to the protective casing.

2.4 Construction Techniques

2.4.1 Well Installation

The borehole should be bored, drilled, or augered as close to vertical as possible, and checked with a plumb bob or level. Deviation from plumb should be within 1° per 50ft of depth. Slanted boreholes are undesirable and should be noted in the boring logs and final construction logs. The depth and volume of the borehole, including the over-drilling if applicable, should have been calculated and the appropriate materials procured prior to drilling activities.

The well casings should be secured to the well screen by flush-jointed threads and placed into the borehole and plumbed by the use of centralizers and/or a plumb bob and level. Another method of placing the well screen and casings into the borehole and plumbing them at the same time is to suspend the string of well screen and casings in the borehole by means of a hoist on the drill rig. This wireline method is especially useful if the borehole is deep and a long string of well screen and casings have to be set and plumbed.

No lubricating oils or grease should be used on casing threads. No glue of any type should be used to secure casing joints. Teflon "O" rings can also be used to insure a tight fit and minimize leakage; however, "O" rings made of other materials are not acceptable if the well is going to be sampled for organic compound analyses.

Before the well screen and casings are placed on the bottom of the borehole, at least 6 inches of filter material should be placed at the bottom of the borehole to serve as a firm footing. The string of well screen and casings should then be placed into the borehole and plumbed. Centralizers can be used to plumb a well, but centralizers should be placed so that the placement of the filter pack, bentonite pellet seal, and annular grout will not be hindered. Centralizers placed in the wrong locations can cause bridging during material placement. Monitoring wells less than 50 feet deep generally do not need centralizers. If centralizers are used they should be placed below the well screen and above the bentonite pellet seal. The specific placement intervals should be decided based on site conditions.

When installing the well screen and casings through hollow-stem augers, the augers should be slowly extracted as the filter pack, bentonite pellet seal, and grout are tremied and/or poured into place. The gradual extraction of the augers will allow the materials being placed in the augers to flow out of the bottom of the augers into the borehole. If the augers are not gradually extracted, the materials (sand, pellets, etc.) will accumulate at the bottom of the augers causing potential bridging problems.

After the string of well screen and casing is plumb, the filter pack material should then be placed around the well screen to the designated depth. With cased drilling methods, the sand should be poured into the casing or augers until the lower portion is filled. The casing or augers are then withdrawn, allowing the sand to flow into the evacuated space. With hollow stem augers, sand should always fill the augers 6-12 inches, maintained by pouring the sand while checking the level with a weighted tag line. The filter pack sand in open boreholes should be installed by tremie methods, using water to wash the sand through the pipe to the point of placement.

After the filter pack has been installed, the bentonite pellet seal (if used) should be placed directly on top of the filter pack to an unhydrated thickness of two feet. When installing the seal for use with cement grouts, the bentonite pellet seal should be allowed to hydrate a minimum of eight hours or the manufacturer's recommended hydration time, whichever is longer.

After the pellet seal has hydrated for the specified time, the grout should then be pumped by the tremie method into the annular space around the casings. The grout should be allowed to set for a minimum of 24 hours before the surface pad and protective casing are installed.

After the surface pad and protective casing are installed, bumper guards should be installed (if needed). The bumper guards should be placed around the concrete surface pad in a configuration that provides maximum protection to the well. Each piece of steel pipe or approved material should be installed into an 8-to 10-inch diameter hole, to a minimum depth of 2 feet below ground surface, and filled with concrete. As previously stated, the bumper guard should extend above the ground surface a minimum of 3 feet. The total length of each bumper guard should be a minimum of 5 feet.

After the wells have been installed, the outer protective casing should be painted with a highly visible paint. The wells should be permanently marked with the well number, date installed, site name, elevation, etc., either on the cover or an appropriate place that will not be easily damaged and/or vandalized.

If the monitoring wells are installed in a high traffic area such as a parking lot, in a residential yard, or along the side of a road it may be desirable to finish the wells to the ground surface and install water-tight flush mounted traffic and/or man-hole covers. Flush mounted traffic and man-hole covers are designed to extend from the ground surface down into the concrete plug around the well casing. Although flush mounted covers may vary in design, they should have seals that make the unit water-tight when closed and secured. The flush mounted covers should be installed slightly above grade to minimize standing water and promote runoff. Permanent identification markings should be placed on the covers or in the concrete plug around the cover. Expansive sealing plugs should be used to cap the well riser to prevent infiltration of any water that might enter the flush cover.

2.4.2 Double-Cased Wells

Double-cased wells should be constructed when there is reason to believe that interconnection of two aquifers by well construction may cause cross-contamination or when flowing sands make it impossible to install a monitoring well using conventional methods. A highly contaminated surface soil zone may also be cased off so that drilling may continue below the casing with reduced danger of cross contamination. A pilot borehole should be bored through the overburden and/or the contaminated zone into the clay confining layer or bedrock. An outer casing (sometimes called surface or pilot casings) should then be placed into the borehole and sealed with grout. The borehole and outer casing should extend into tight clay a minimum of two feet and into competent bedrock a minimum of 1 foot. The total depths into the clay or bedrock will vary, depending on the plasticity of the clay and the extent of weathering and\or fracturing of the bedrock. The final depths should be approved by a senior field geologist. The size of the outer casing should be of sufficient inside diameter to contain the inner casing, and the 2-inch minimum annular space. In addition, the borehole should be of sufficient size to contain the outer casing and the 2-inch minimum outer annular space, if applicable.

The outer casing should be grouted by the tremie, displacement, grout shoe, or Halliburton method from the bottom to the ground surface. The grout should be pumped into the annular space between the outer casing and the borehole wall. A minimum of 24 hours should be allowed for the grout plug (seal) to cure before attempting to drill through it. The grout mixture used to seal the outer annular space should be either a neat cement, cement/bentonite, cement/sand, or a 30% solids bentonite grout. However, the seal or plug at the bottom of the borehole and outer casing should consist of a Type I portland cement/bentonite or cement/sand mixture. The use of a pure bentonite grout for a bottom plug or seal is not acceptable, because the bentonite grout cures to a gel-like material, and is not rigid enough to withstand the stresses of drilling. When drilling through the seal, care should be taken to avoid cracking, shattering, or washing out the seal. If caving conditions exist so that the outer casing cannot be sufficiently sealed by grouting, the outer casing should be driven into place and a grout seal placed in the bottom of the casing.

2.4.2.1 Bedrock Wells

The installation of monitoring wells into bedrock can be accomplished in two ways:

1. The first method is to drill or bore a pilot borehole through the soil overburden into the bedrock. An outer casing is then installed into the borehole by setting it into the bedrock, and grouting it into place as described in the previous section. After the grout has set, the borehole can then be advanced through the grout seal into the bedrock. The preferred method of advancing the borehole into the bedrock is rock coring. Rock coring makes a smooth, round hole through the seal and into the bedrock without cracking and/or shattering the seal. Roller cone bits are used in soft bedrock, but extreme caution should be taken when using a roller cone bit to advance through the grout seal in the bottom of the borehole because excessive water and "down" pressure can cause cracking, eroding (washing), and/or shattering of the seal. Low volume air hammers may be used to advance the borehole, but they have a tendency to shatter the seal because of the hammering action. If the structural integrity of the grout seal is in question, a pressure test can be utilized to check for leaks. A visual test can also be made by examining the cement/concrete core that is collected when the seal is cored with a diamond coring bit. If the seal leaks (detected by pressure testing) and/ or the core is cracked or shattered, or if no core is recovered because of washing, excessive down pressure, etc., the seal is not acceptable. The concern over the structural integrity of the grout seal applies to all double cased wells. Any proposed method of double casing and/or seal testing will be evaluated on its own merits, and will have to be approved by a senior field geologist before and during drilling activities, if

applicable. When the drilling is complete, the finished well will consist of an open borehole from the ground surface to the bottom of the well. There is no inner casing, and the outer surface casing, installed down into bedrock, extends above the ground surface, and also serves as the outer protective casing. If the protective casing becomes cracked or is sheared off at the ground surface, the well is open to direct contamination from the ground surface and will have to be repaired immediately or abandoned. Another limitation to the open rock well is that the entire bedrock interval serves as the monitoring zone. In this situation, it is very difficult or even impossible to monitor a specific zone, because the contaminants being monitored could be diluted to the extent of being non-detectable. The installation of open bedrock wells is generally not acceptable in the Superfund and RCRA programs, because of the uncontrolled monitoring intervals. However, some site conditions might exist, especially in cavernous limestone areas (karst topography) or in areas of highly fractured bedrock, where the installation of the filter pack and its structural integrity are questionable. Under these conditions the design of an open bedrock well may be warranted.

2. The second method of installing a monitoring well into bedrock is to install the outer surface casing and drill the borehole (by an approved method) into bedrock, and then install an inner casing and well screen with the filter pack, bentonite seal, and annular grout. The well is completed with a surface protective casing and concrete pad. This well installation method gives the flexibility of isolating the monitoring zone(s) and minimizing inter-aquifer flow. In addition, it gives structural integrity to the well, especially in unstable areas (steeply dipping shales, etc.) where the bedrock has a tendency to shift or move when disturbed. Omitting the filter pack around the well screen is a general practice in some open rock borehole installations, especially in drinking water and irrigation wells. However, without the filter pack to protect the screened interval, sediment particles from the well installation and/or from the monitoring zone could clog the well screen and/or fill the screened portion of the well rendering it inoperable. Also, the filter pack serves as a barrier between the bentonite seal and the screened interval. Rubber inflatable packers have been used to place the bentonite seal when the filter pack is omitted, but the packers have to remain in the well permanently and, over a period of time, will decompose and possibly contribute contaminants to the monitoring zone.

2.5 Well Construction Materials

2.5.1 Introduction

Well construction materials are chosen based on the goals and objectives of the proposed monitoring program and the geologic conditions at the site(s). In this section, the different types of available materials will be discussed.

2.5.2 Well Screen and Casing Materials

When selecting the materials for well construction, the prime concern should be to select materials that will not contribute foreign constituents, or remove contaminants of concern from the ground water. If the monitoring program is designed to analyze for organic compounds, stainless steel materials are the preferred choice. If the monitoring program calls for the analyses of only inorganic compounds or the contaminants or formation are highly corrosive, then rigid PVC materials meeting National Sanitary Foundation (NSF) Standard 14 type WC (Well Casing) are acceptable. PVC materials may be acceptable for monitoring identified organic compounds in a soluble aqueous phase where incompatibilities are known to not exist. EPA document EPA/540/S-95/503, *Nonaqueous Phase Liquids Compatibility with Materials Used in Well Construction, Sampling, and Remediation* (http://www.epa.gov/ada/-download/issue/napl.pdf) should be used for guidance in this area and in the use of PVC with non-aqueous phase liquids (NAPLs). Another concern is to select materials that will be rugged enough to endure the entire monitoring period. Site conditions will generally dictate the type of materials that can be used. A preliminary field investigation should be conducted to determine the geologic conditions, so that the most suitable materials can be selected. The best grade or highest quality material for that particular application should be selected. Each manufacturer can supply the qualitative data for each grade of material that is being considered. All materials selected for monitoring well installation should be evaluated and approved by a senior field geologist prior to field activities.

Well screen and casing materials generally used in monitoring well construction on RCRA and Superfund sites are listed in order of preference:

1. Stainless Steel (304 or 316)
2. Rigid PVC meeting NSF Standard 14 (type WC)
3. Other (where applicable)

There are other materials used for well screens and casings such as black iron, carbon steel, galvanized steel, and fiberglass, but these materials are not recommended for use in long term monitoring programs at hazardous waste sites, because of their low resistance to chemical attack and potential constituent contribution to the ground water. In cases where a driven casing is used, or a high strength outer casing is needed, carbon steel may be acceptable in non-corrosive aquifers. This outer casing should have threaded connections. Welding casing is

not an acceptable practice unless all relevant safety issues have been adequately addressed.

The minimum nominal casing size for most permanent monitoring wells will be 2". Where a complete program of installation, monitoring, and abandonment is being designed, smaller wells may be installed if suitable purging and sampling equipment for the smaller diameter wells can be specified and obtained. The length of well screens in permanent monitoring wells should be long enough to effectively monitor the interval or zone of interest. However, well screens designed for long term monitoring purposes should normally not be less than 5 feet in length. Well screens less than 5 feet long are generally only used in temporary monitoring wells where ground water samples are collected for screening purposes.

2.5.3 Filter Pack Materials

The filter pack materials should consist of clean, rounded to well-rounded, hard, insoluble particles of siliceous composition. The required grain-size distribution or particle sizes of the filter pack materials should be selected based upon a sieve analysis conducted on the soil samples collected from the aquifer materials and/or the formation(s) to be monitored. Filter pack materials should not be accepted unless proper documentation can be furnished as to the composition, grain-size distribution, cleaning procedure, and chemical analysis. If a data search reveals that there is enough existing data to adequately design the well screen and filter pack, then it may not be necessary to conduct a sieve analysis on the formation materials to be monitored. However, all data and design proposals will be evaluated and approved by a senior staff geologist before field activities begin.

2.5.4 Filter Pack and Well Screen Design

The majority of monitoring wells are installed in shallow ground water aquifers that consist of silts, clays, and sands in various combinations. These shallow aquifers are not generally characteristic of aquifers used for drinking water. Therefore, modifications to the procedures used for the design of water well filter packs may be required. In cases where insufficient experience exists with local or similar materials, the filter pack and well screen design should be based on the results of a sieve analysis conducted on soil samples collected from the aquifer or the formation(s) that will be monitored.

In formations consisting primarily of fines (silts and clays), the procedures for water well screen design may result in requirements for filter packs and screen slot sizes that are not available. In those cases the selection of 0.010" screen slots with a 20-40 sand filter pack, or 0.005" screen slots with 100 sand filter pack for very fine formations, will be acceptable practice. Table 6.6.1 provides size specifications for the selection of sand packs for fine formation materials. ASTM standard D5092, *Design and Installation of Ground Water Monitoring Wells in*

Aquifers, may be consulted for further guidance on specifications for sand appropriate for these applications.

Table 6.6.1
Sand Pack Specifications

Screen Opening (in)	Sand Pack Mesh Name	1% Passing Size (d-1) (in)	10% Passing Size (d-10) (in)	30% Passing Size (d-30) (in)	Derived 60% Passing Size (d-60) (in)	Range for Uniformity Coefficient
0.005-0.006	100	.0035 - .0047	.0055 - .0067	.0067 - .0083	.0085 - .0134	1.3 - 2.0
0.010"	20-40	.0098 - .0138	.0157 - .0197	.0197 -.0236	.020 - .0315	1.1 - 1.6

The following procedure should be used in coarser grained formations:

The data from the sieve analysis are plotted on a grain-size distribution graph, and a grain-size distribution curve is generated. From this grain-size distribution curve, the uniformity coefficient (Cu) of the aquifer material is determined. The Cu is the ratio of the 60 percent finer material (d60) to the 10 percent finer material (d10)

$$Cu = (d60/d10)$$

The Cu ratio is a way of grading or rating the uniformity of grain size. For example, a Cu of unity means that the individual grain sizes of the material are nearly all the same, while a Cu with a large number indicates a large range of particle sizes. As a general rule, a Cu of 2.5 or less should be used in designing the filter pack and well screen.

Before designing the filter pack and well screen, the following factors should be considered:

1. Select the well screen slot openings that will retain 90 percent of the filter pack material.

2. The filter pack material should be of the size that minimizes head losses through the pack and also prevents excessive sediment (sand, silt, clay) movement into the well.

3. A filter material of varying grain sizes is not acceptable because the smaller particles fill the spaces between the larger particles thereby reducing the void spaces and increasing resistance to flow. Therefore, filter material of the same grain size and well rounded is preferred.

4. The filter pack design is based on the gradation of the finest aquifer materials being analyzed.

Steps to design a filter pack in aquifers:

1. Construct a grain-size distribution curve, on a grain-size distribution graph, from the sieve analysis of the aquifer materials. The filter pack design (as stated above) is based on the gradation of the finest aquifer materials.

2. Multiply the d30 size from the grain-size distribution graph by a factor of four to nine (Pack-Aquifer ratio). A factor of four is used if the formation is fine-grained and uniform (Cu is less than 3), six if it is coarse-grained and non-uniform, and up to nine if it is highly non-uniform and contains silt. Head losses through filter packs increase as the Pack-Aquifer (P-A) ratios decrease. In order to design a fairly stable filter pack with a minimum head loss, the d30 size should be multiplied by a factor of four.

3. Plot the point from step 2 on the d30 abscissa of a grain-size distribution graph and draw a smooth curve with a uniformity coefficient of approximately 2.5.

4. A curve for the permissible limits of the filter pack is drawn plus or minus 8 per cent of the desired curve with the Cu of 2.5.

5. Select the slot openings for the well screen that will retain 90 per cent or more of the filter pack material.

The specific steps and procedures for sieve analysis and filter pack design can be found in soil mechanics, ground water, and water well design books. The staff geologists and/or engineers should be responsible for the correct design of the monitoring wells and should be able to perform the design procedures.

2.6 Safety Procedures for Drilling Activities

A site health and safety plan should be developed and approved by the Branch Safety Officer or designee prior to any drilling activities, and should be followed during all drilling activities. The driller or designated safety person should be responsible for the safety of the drilling team performing the drilling activities. All personnel conducting drilling activities should be qualified in proper drilling and safety procedures. Before any drilling activity is initiated, utilities should be marked or cleared by the appropriate state or municipal utility protection organization. In developed areas, additional measures

should be taken to locate utilities not covered by the utility protection program. Before operating the drill rig, a pilot hole should be dug (with hand equipment) to a depth of three feet to check for undetected utilities or buried objects. Proceed with caution until a safe depth is reached where utilities normally would not be buried. The following safety requirements should be adhered to while performing drilling activities:

1. All drilling personnel should wear safety hats, safety glasses, and steel toed boots. Ear plugs are required and will be provided by the safety officer or driller.

2. Work gloves (cotton, leather, etc.) should be worn when working around or while handling drilling equipment.

3. All personnel directly involved with the drilling rig(s) should know where the kill switch(s) is located in case of emergencies.

4. All personnel should stay clear of the drill rods or augers while in motion, and should not grab or attempt to attach a tool to the drill rods or augers until they have completely stopped rotating. Rod wipers, rather than gloves or bare hands should be used to remove mud, or other material, from drill stem as it is withdrawn from the borehole.

5. Do not hold drill rods or any part of the safety hammer assembly while taking standard penetration tests or while the hammer is being operated.

6. Do not lean against the drill rig or place hands on or near moving parts at the rear of the rig while it is operating.

7. Keep the drilling area clear of any excess debris, tools, or drilling equipment.

8. The driller will direct all drilling activities. No work on the rig or work on the drill site will be conducted outside of the driller's direction. Overall drill site activities will be in consultation with the site geologist or engineer, if present.

9. Each drill rig will have a first-aid kit and a fire extinguisher located on the rig in a location quickly accessible for emergencies. All drilling personnel will be familiarized with their location.

10. Work clothes will be firm fitting, but comfortable and free of straps, loose ends, strings etc., that might catch on some moving part of the drill rig.

11. Rings, watches, or other jewelry will not be worn while working around the drill rig.

12. The drill rig should not be operated within a minimum distance of 20 feet of overhead electrical power lines and/or buried utilities that might cause a safety hazard. In addition, the drill rig should not be operated while there is lightening in the area of the drilling site. If an electrical storm moves in during drilling activities, the area will be vacated until it is safe to return.

2.7 Well Development

A newly completed monitoring well should not be developed for at least 24 hours after the surface pad and outer protective casing are installed. This will allow sufficient time for the well materials to cure before development procedures are initiated. The main purpose of developing new monitoring wells is to remove the residual materials remaining in the wells after installation has been completed, and to try to re-establish the natural hydraulic flow conditions of the formations which may have been disturbed by well construction, around the immediate vicinity of each well. A new monitoring well should be developed until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductivity have stabilized. In most cases the above requirements can be satisfied; however, in some cases the pH, temperature, and specific conductivity may stabilize but the water remains turbid. In this case the well may still contain well construction materials, such as drilling mud in the form of a mud cake and/or formation soils that have not been washed out of the borehole. Excessive or thick drilling mud cannot be flushed out of a borehole with one or two well volumes of flushing. Continuous flushing over a period of several days may be necessary to complete the well development. If the well is pumped to dryness or near dryness, the water table should be allowed to sufficiently recover (to the static water level) before the next development period is initiated. Caution should be taken when using high rate pumps and/or large volume air compressors during well development because excessive high rate pumping and high air pressures can damage or destroy the well screen and filter pack. The onsite geologist should make the decision as to the development completion of each well. All field decisions should be documented in the field log book.

The following development procedures, listed in approximate increasing order of the energy applied to the formation materials, are generally used to develop wells:

1. Bailing
2. Pumping/overpumping
3. Surging
4. Backwashing ("rawhiding")
5. Jetting
6. Compressed air (with appropriate filtering): airlift pumping and air surging

These development procedures can be used, individually or in combination, in order to achieve the most effective well development. In most cases, over-pumping and surging will adequately develop the well without imparting undue forces on the formation or well materials. Except when compressed air is being used for well development, sampling can be initiated as soon as the ground water has re-equilibrated, is free of visible sediment, and the water quality parameters have stabilized. Since site conditions vary, even between wells, a general rule-of-thumb is to wait 24 hours after development to sample a new monitoring well. Wells developed with stressful measures may require as long as a 7-day interval before sampling. In particular, air surge developed wells require 48 hours or longer after development so that the formation can dispel the compressed air and re-stabilize to pre-well construction conditions. Because of the danger of introducing

contaminants with the airstream, the possibility of entraining air in the aquifer, and the violent forces imparted to the formation, air surging is the least desired method of development and should only be used where there is a specific need for the procedure. Air-lift pumping is permissible where an eductor pipe is used and several well volumes of water are removed from the well by other by pumping means after air-lift pumping. The selected development method(s) should be approved by a senior field geologist before any well installation activities are initiated.

2.8 Well Decommisioning (Abandonment)

When a decision is made to decommission (abandon) a monitoring well, the borehole should be sealed in such a manner that the well cannot act as a conduit for migration of contaminants from the ground surface to the water table or between aquifers. To properly decommission a well, the preferred method is to completely remove the well casing and screen from the borehole, clean out the borehole, and backfill with a cement or bentonite grout, neat cement, or concrete. In order to comply with state well decommissioning requirements, the appropriate state agency should be notified (if applicable) of monitoring well decommissioning. However, some state requirements are not explicit, so a technically sound well abandonment method should be designed based on the site geology, well casing materials, and general condition of the well(s).

2.8.1 Decommissioning Procedures

As previously stated the preferred method should be to completely remove the well casing and screen from the borehole. This may be accomplished by augering with a hollow-stem auger over the well casing down to the bottom of the borehole, thereby removing the grout and filter pack materials from the hole. The well casing should then be removed from the hole with the drill rig. The clean borehole can then be backfilled with the appropriate grout material. The backfill material should be placed into the borehole from the bottom to the top by pressure grouting with the positive displacement method (tremie method). This abandonment method can be accomplished on small diameter (1-inch to 4-inch) wells without too much difficulty. With wells having 6-inch or larger diameters, the use of hollow-stem augers for casing removal is very difficult or almost impossible. Instead of trying to ream the borehole with a hollow-stem auger, it is more practical to force a drill stem with a tapered wedge assembly or a solid-stem auger into the well casing and extract it out of the borehole. Wells with little or no grouted annular space and/or sound well casings can be removed in this manner. However, old wells with badly corroded casings and/or thickly grouted annular space have a tendency to twist and/or break-off in the borehole. When this occurs, the well will have to be grouted with the remaining casing left in the borehole. The preferred method in this case should be to pressure grout the borehole by placing the tremie tube to the bottom of the well casing, which will be the well screen or the bottom sump area below the well screen. The pressurized grout will be forced out through the well screen into the filter material and up the inside of the well casing sealing holes and breaks that are present.

A PVC well casing may be more difficult to remove from the borehole than a metal casing, because of its brittleness. If the PVC well casing breaks during removal, the borehole should be cleaned out by using a drag bit or roller cone bit with the wet rotary method to grind the casing into small cuttings that will be flushed out of the borehole by water or drilling mud. Another method is to use a solid-stem auger with a carbide tooth pilot bit to grind the PVC casing into small cuttings that will be brought to the surface on the rotating flights. After the casing materials have been removed from the borehole, the borehole should be cleaned out and pressure grouted with the approved grouting materials.

Where state regulations and conditions permit, it may be permissible to grout the casing in place. This decision should be based on confidence in the original well construction practice, protection of drinking water aquifers, and anticipated future property uses. The pad should be demolished and the area around the casing excavated. The casing should be sawn off at a depth of three feet below ground surface. The screen and riser should be tremie grouted with a 30% solids bentonite grout in the saturated zone. The remaining riser may be grouted with a cement grout for long term resistance to desiccation.

3 Temporary Monitoring Well Installation

3.1 Introduction

Five types of temporary monitoring well installation techniques have been demonstrated as acceptable. The type selected for a particular site is dependent upon site conditions. The project leader and site geologist should be prepared to test temporary well installations on site and select the best solution. Temporary wells are cost effective, may be installed quickly, and provide a synoptic picture of ground water quality.

Temporary monitoring well locations are not permanently marked, nor are their elevations normally determined. Sand pack materials may or may not be used, but typically there is no bentonite seal, grout, surface completion, or extensive development (as it normally applies to permanent monitoring wells). Temporary wells are generally installed, purged, sampled, removed, and backfilled in a matter of hours.

Due to the nature of construction, turbidity levels may initially be high. However, these levels may be reduced by low flow purging and sampling techniques as described in Section 7.2.4.

Temporary wells may be left overnight, for sampling the following day, but the well must be secured, both against tampering and against the fall hazard of the open annulus. If the well is not sampled immediately after construction, the well should be purged prior to sampling as specified in SESD Operating Procedure for Groundwater Sampling, SESDPROC-301.

3.2 Data Limitation

Temporary wells described in this section are best used for delineation of contaminant plumes at a point in time, and for some site screening purposes. They are not intended to replace permanent monitoring wells. Temporary wells can be used in conjunction with a mobile laboratory, where quick analytical results can be used to delineate contaminant plumes.

3.3 Temporary Well Materials

Materials used in construction of temporary monitoring wells are the same standard materials used in the construction of permanent monitoring wells. Sand used for the filter pack (if any) should be as specified in Section 2.5.3, Filter Pack Materials. The well screen and casing should be stainless steel for ruggedness and suitability for steam cleaning and solvent rinsing. Other materials may be acceptable, on a case by case basis. Some commercially available temporary well materials, pre-packed riser, screen and filter pack assemblies are available commercially; however, these pre-assembled materials cannot be cleaned. Appropriate QA/QC must be performed to assure there will be no introduction of contamination.

3.4 Temporary Monitoring Well Borehole Construction

Borehole construction for temporary wells is as specified in Section 2.3, using a drill rig. Alternatively, boreholes may be constructed using hand augers or portable powered augers (generally limited to depths of ten feet or less). If a drill rig is used to advance the borehole, the augers must be pulled back the length of the well screen (or removed completely) prior to sampling. When hand augers are used, the borehole is advanced to the desired depth (or to the point where borehole collapse occurs). In situations where borehole collapse occurs, the auger bucket is typically left in the hole at the point of collapse while the temporary well is assembled. When the well is completely assembled, a final auger bucket of material is quickly removed and the well is immediately inserted into the borehole, pushing, as needed, to achieve maximum penetration into the saturated materials.

3.5 Temporary Monitoring Well Types

Five types of monitoring wells which have been shown to be acceptable are presented in the order of increasing difficulty to install and increasing cost:

3.5.1 No Filter Pack

This is the most common temporary well and is very effective in many situations. After the borehole is completed, the casing and screen are simply inserted. This is the least expensive and fastest well to install. This type of well is extremely sensitive to turbidity fluctuations because there is no filter pack. Care should be taken to not disturb the casing during purging and sampling.

3.5.2 Inner Filter Pack

This type differs from the "No Filter Pack" well in that a filter pack is placed inside the screen to a level approximately 6 inches above the well screen. This ensures that all water within the casing has passed through the filter pack. For this type well to function properly, the static water level must be at least 6-12 inches above the filter pack. The screen slots may plug in some clayey environments with this construction method and others that use sand only inside the well screen.

3.5.3 Traditional Filter Pack

For this type of well, the screen and casing are inserted into the borehole, and the sand is poured into the annular space surrounding the screen and casing. Occasionally, it may be difficult to effectively place a filter pack around shallow open boreholes, due to collapse. This method requires more sand than the "inner filter pack" well, increasing material costs. As the filter pack is placed, it mixes with the muddy water in the borehole, which may increase the amount of time needed to purge the well to an acceptable level of turbidity.

3.5.4 Double Filter Pack

The borehole is advanced to the desired depth. As with the "inner filter pack" the well screen is filled with filter pack material and the well screen and casing inserted until the top of the filter pack is at least 6 inches below the water table. Filter pack material is poured into the annular space around the well screen. This type temporary well construction can be effective in aquifers where fine silts or clays predominate. This construction technique takes longer to implement and uses more filter pack material than others previously discussed.

3.5.5 Well-in-a-Well

The borehole is advanced to the desired depth. At this point, a 1-inch well screen and sufficient riser is inserted into a 2-inch well screen with sufficient riser, and centered. Filter pack material is then placed into the annular space surrounding the 1-inch well screen, to approximately 6 inches above the screen. The well is then inserted into the borehole.

This system requires twice as much well screen and riser, with attendant increases in assembly and installation time. The increased amount of well construction materials results in a corresponding increase in decontamination time and costs. The use of pre-packed well screens in this application will require rinse blanks of each batch of screens. Pre-pack Screen assemblies cannot be decontaminated for reuse.

3.6 Decommissioning

Temporary well boreholes must be decommissioned after sampling and removal of the screen and riser. Backfilling the holes with cuttings may be acceptable practice for shallow holes in uniform materials with expected low contamination levels. Use of cuttings would not be an acceptable practice if waste materials were encountered or a confining layer was breached. Likewise, where the borehole is adjacent to, or downgradient of contaminated areas, the loose backfilled material could create a highly permeable conduit for contaminant migration. If the borehole will not be backfilled with the soil cuttings for this or other reasons, then SESD Operating Procedure for Management of Investigation Derived Waste, SESDPROC-202, should be referenced regarding disposal of the cuttings as IDW.

4 Temporary Monitoring Well Installation Using the Geoprobe® Screen Point 15/16 Groundwater Sampler

4.1 Introduction

The Geoprobe® Screen Point 15/16 Groundwater Sampler is a discrete interval ground water sampling device that can be pushed to pre-selected sampling depths in saturated, unconsolidated materials. Once the target depth has been reached, the screen is opened and groundwater can be sampled as a temporary monitoring well, which yields a representative, uncompromised sample from that depth. Using knock-out plugs, this method also allows for grouting of the push hole during sample tool retrieval.

The Screen Point® 15 sampler consist of four parts (drive point, screen, sampler sheath and drive head), with an assembled length of 52 inches (1321 mm) and a maximum OD of 1.5 inches (38 mm). When opened, it has an exposed screen length of 41 inches (1041 mm). It is typically pushed using 1.25-inch probe rod. The Screen Point® 16 consists of the same parts and works in the same fashion, the only differences being larger diameter and its use with 1.5" rods.

4.1.1 Assembly of Screen Point® 15/16 Groundwater Sampler

1. Install O-ring on expendable point and firmly seat in the angled end of the sampler sheath.

2. Place a grout plug in the lower end of the screen section. Grout plug material should be chosen with consideration for site specific Data Quality Objectives (DQOs).

3. When using stainless steel screen, place another O-ring* in the groove on the upper end of the screen and slide it into the sampler sheath.

4. Place an O-ring* on the bottom of the drive head and thread into the top of the sampler sheath.

5. The Screen Point® 15/16 Groundwater Sampler is now assembled and ready to push for sample collection.

   * It should be noted that O-ring use in steps 3 and 4 are optional.

4.1.2 Installation of Screen Point® 15/16 Groundwater Sampler

1. Attach drive cap to top of sampler and slowly drive it into the ground. Raise the hammer assembly, remove the drive cap and place an O-ring* in the top groove of the drive head. Add a probe rod and continue to push the rod string.

2. Continue to add probe rods until the desired sampling depth is reached.

3. When the desired sampling depth is reached, re-position the probe derrick and position either the casing puller assembly or the rod grip puller over the top of the top probe rod.

4. Thread a screen push adapter on an extension rod and attach sufficient additional extension rods to reach the top of the Screen Point® 15/16 sampler. Add an extension handle to the top of the string of extension rods and run this into the probe rod, resting the screen push adapter on top of the sampler.

5. To expose the screened portion of the sampler, exert downward pressure on the sampler, using the extension rod and push adapter, while pulling the probe rod upward. To expose the entire open portion of the screen, pull the probe rod upward approximately 41 inches.

6. At this point, the Screen Point® 15/16 Groundwater Sampler has been installed as a temporary well and may be sampled using appropriate ground water sampling methodology. If waters levels are less than approximately 25 feet, EIB personnel typically use a peristaltic pump, utilizing low-flow methods, to collect ground water samples from these installations. If water levels are greater than 25 feet, a manual bladder pump, a micro bailer, or other method may have to be utilized to collect the sample (SESD Operating Procedure for Groundwater Sampling, SESDPROC-301-R0) provides detailed descriptions of these techniques and methods).

4.1.3 Special Considerations for Screen Point® 15/16 Installations

Decommissioning (Abandonment)

In many applications, it may be appropriate to grout the abandoned probe hole where a Screen Point® 15/16 sampler was installed. This probe hole decommissioning can be accomplished through two methods which are determined by location and contamination risk. In certain non-critical areas, boreholes may be decommissioned by filling the saturated zone with bentonite pellets and grouting the vadose zone with neat cement poured from the surface or Bentonite pellets properly hydrated in place. Probe holes in areas where poor borehole sealing could present a risk of contaminant migration should be decommissioned by pressure grouting through the probe rod during sampler retrieval. To accomplish this, the grout plug is knocked out of the bottom of the screen using a grout plug push adapter and a grout nozzle is fed through the probe rod, extending just below the bottom of the screen. As the probe rod and sampler

are pulled, grout is injected in the open hole below the screen at a rate that just fills the open hole created by the pull. Alternatively, the screen can generally be pulled and the hole re-probed with a tool string to be used for through-the-rod grouting.

Screen Material Selection

Screen selection is also a consideration in sampling with the Screen Point® 15/16 sampler. The screens are available in two materials, stainless steel and PVC. Because of stainless steel's durability, ability to be cleaned and re-used, and overall inertness and compatibility with most contaminants, it is the material typically used during EIB investigations.

APPENDIX C

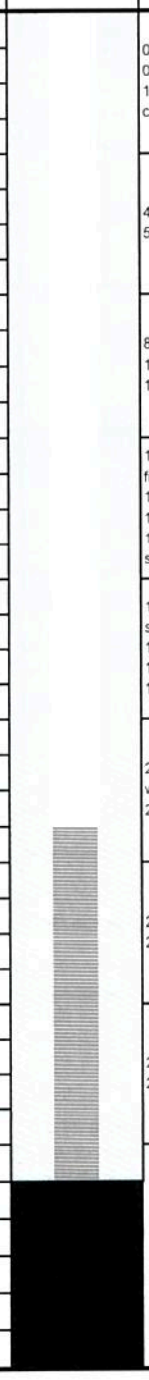
BORING & WELL CONSTRUCTION LOGS

BORING LOG: RMW-01

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-01	BORING DATE:	2-May-2017
METHOD:	DPT / HSA	BIT DIA.:	2.25" / 6.5"
TOTAL DEPTH:	33 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	0730
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])

WELL CONSTRUCTION DIAGRAM



LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 0.5 ft: gray black well graded GRAVEL with sand (GW); asphalt & fill 0.5 - 1.7 ft: red brown CLAY with silt & trace sand (CL) 1.7 - 3.7 ft: brown orange tan poorly graded medium to coarse SAND with clay & gravel (SP-SC)	3.7 ft recovery PID: 1.3 ppm
4.0 - 5.0 ft: brown tan orange sandy CLAY (CL) 5.0 - 8.0 ft: brown gray red CLAY with sand (CL)	4.0 ft recovery PID: 1.7 ppm
8.0 - 11.6 ft: brown gray purple poorly graded fine clayey SAND (SC) 11.6 - 11.8 ft: white gray poorly graded cobble GRAVEL (GP) 11.8 - 12.0 ft: brown red silty CLAY (CL)	4.0 ft recovery PID: 1.7 ppm
12.0 - 12.5 ft: white gray poorly graded pebble to cobble GRAVEL (GP): fractured crystalline rock 12.5 - 13.4 ft: brown gray red silty CLAY with sand (CL) 13.4 - 15.0 ft: brown orange gray poorly graded fine clayey SAND (SC) 15.0 - 16.0 ft: brown gray black well graded pebble to cobble GRAVEL with sand & clay (GW)	4.0 ft recovery PID: 0.8 ppm moist @ 15 ft
16.0 - 16.5 ft: brown gray black well graded pebble to cobble GRAVEL with sand & clay (GW) 16.5 - 17.5 ft: brown orange sandy SILT with clay (ML) 17.5 - 18.2 ft: brown orange gray clayey SILT with sand (ML) 18.2 - 20.0 ft: brown gray orange poorly graded fine clayey SAND (SC)	4.0 ft recovery PID: 1.9 ppm
20.0 - 23.0 ft: brown orange black tan poorly graded fine to medium SAND with clay (SP-SC) 23.0 - 24.0 ft: brown orange white sandy CLAY (CL)	4.0 ft recovery wet @ 22 ft
24.0 - 26.9 ft: brown orange gray clayey SAND with silt (SC-SM) 26.9 - 28.0 ft: gray tan brown sandy SILT with clay (SM)	4.0 ft recovery
28.0 - 28.8 ft: gray tan brown sandy SILT with clay (SM) 28.8 - 32.0 ft: brown orange gray silty sand with clay (SM-SC)	4.0 ft recovery

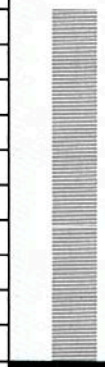
DPT boring terminated @ 32 ft bgs
HSA boring terminated / depth to bottom of well @ 33 ft bgs
top of screen @ 23 ft bgs
sand to 21 ft bgs
bentonite chips to surface

BORING LOG: RMW-02

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-02	BORING DATE:	1-May-2017
METHOD:	DPT / HSA	BIT DIA.:	2.25" / 6.5"
TOTAL DEPTH:	30 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	0930
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])	LITHOLOGICAL DESCRIPTION	COMMENTS
	0 - 0.8 ft: gray black well graded GRAVEL with sand (GW); asphalt & fill 0.8 - 2.0 ft: red orange CLAY with silt (CL) 2.0 - 2.4 ft: brown orange tan CLAY with SAND (CL) 2.4 - 2.5 ft: black cobble gravel (GP) 2.5 - 2.8 ft: brown orange tan CLAY with SAND (CL)	2.8 ft recovery PID: 0.0 ppm
5	4.0 - 8.0 ft: tan orange red gray soft CLAY with trace sand (CL)	4.0 ft recovery PID: 0.0 ppm
10	8.0 - 9.6 ft: tan orange red gray soft CLAY with trace sand (CL) 9.6 - 10.8 ft: gray pink tan clayey SILT (ML) 10.8 - 12.0 ft: tan orange pink silty CLAY (CL)	4.0 ft recovery PID: 0.0 ppm
15	12.0 - 13.0 ft: tan orange pink silty CLAY (CL) 13.0 - 13.5 ft: gray pink sandy SILT with clay (ML) 13.5 - 16.0 ft: tan orange gray silty CLAY with sand (CL)	4.0 ft recovery PID: 0.8 ppm
	16.0 - 17.6 ft: tan orange gray silty CLAY with sand (CL) 17.6 - 19.9 ft: tan gray orange clayey SAND (SC)	3.9 ft recovery PID: 1.2 ppm
20	20.0 - 23.9 ft: tan gray orange clayey SAND (SC)	3.9 ft recovery PID: 1.3 ppm
25	24.0 - 25.0 ft: tan gray orange clayey SAND (SC) 25.0 - 27.2 ft: tan light gray orange poorly graded fine SAND with clay (SP-SC)	3.2 ft recovery wet @ 24.5 ft
30	DPT boring terminated @ 27.2 ft bgs HSA boring terminated / bottom of well @ 30 ft bgs top of screen @ 20 ft bgs sand to 18 ft bgs bentonite chips to surface	
35		

WELL CONSTRUCTION DIAGRAM

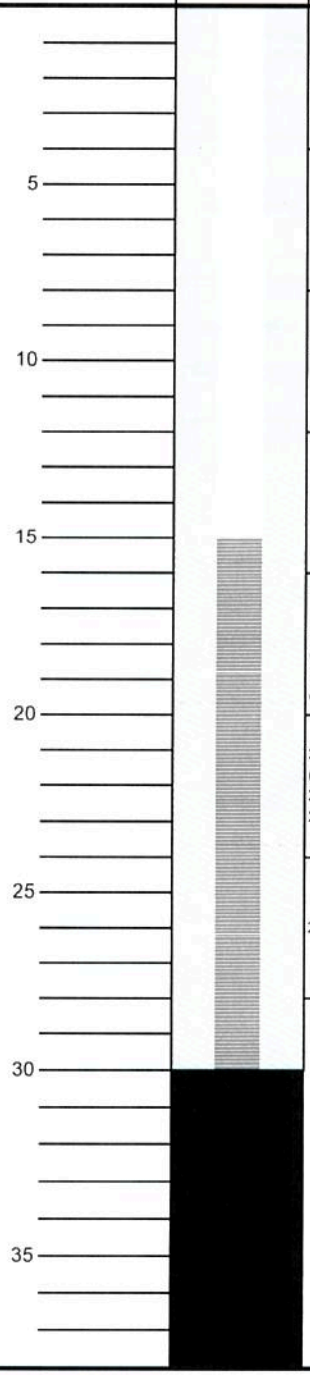


BORING LOG: RMW-03

SITE:	**Former Macon Telegraph Publishing Company**	LOCATION:	**Macon, GA**
		PROJECT NO.:	—
BORING NO.:	**RMW-03**	BORING DATE:	**2-May-2017**
METHOD:	**DPT / HSA**	BIT DIA.:	**2.25" / 6.5"**
TOTAL DEPTH:	**30 ft BGS**	GROUND EL.:	**Not Surveyed**
DRILLING CO.:	**Atlas-Geo Sampling Company**	START TIME:	**1115**
DRILLER:	**Mike Spath**	RIG:	**Power Probe Truck Mount**
LOGGER:	**Michael Patinkin**	REVIEWER:	**Brian Steele**

DEPTH (FEET BELOW GROUND SURFACE [BGS])

WELL CONSTRUCTION DIAGRAM

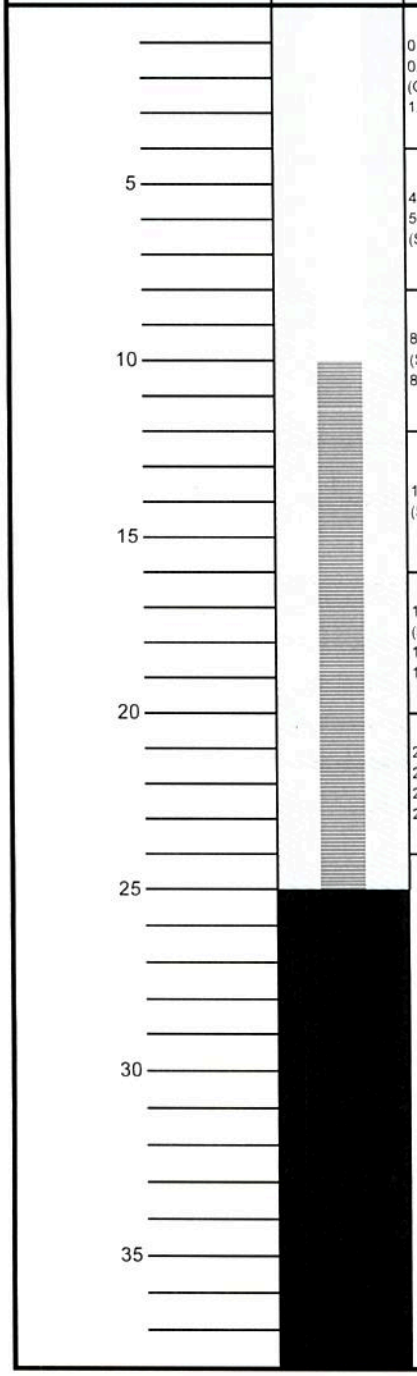


LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 0.9 ft: white gray well graded GRAVEL with very fine sand (GW); concrete 0.9 - 1.8 ft: red brown orange poorly graded medium clayey SAND (SC) 1.8 - 2.7 ft: brown tan stiff sandy CLAY (CL) 2.7 - 3.4 ft: tan brown orange red CLAY with sand & silt (CL)	3.4 ft recovery PID: 3.7 ppm
4.0 - 8.0 ft: tan brown orange red CLAY with sand & silt (CL)	4.0 ft recovery PID: 2.0 ppm
8.0 - 10.0 ft: tan brown orange red CLAY with sand & silt (CL) 10.0 - 11.7 ft: tan brown red white silty CLAY with sand (CL) 11.7 - 12.0 ft: brown red clayey SILT with sand (ML)	4.0 ft recovery PID: 3.0 ppm moist @ 11 ft
12.0 - 16.0 ft: gray brown orange poorly graded fine silty SAND with clay (SM-SC)	4.0 ft recovery PID: 3.0 ppm wet @ 14 ft
16.0 - 17.1 ft: gray brown orange poorly graded fine silty SAND with clay (SM-SC) 17.1 - 18.6 ft: brown orange black poorly graded fine clayey SAND with silt (SC-SM) 18.6 - 20.0 ft: brown orange gray poorly grraded fine silty SAND with clay (SM-SC)	4.0 ft recovery
20.0 - 20.3 ft: brown orange gray poorly grraded fine silty SAND with clay (SM-SC) 20.3 - 21.1 ft: gray black white brown clayey SILT with sand (ML) 21.1 - 24.0 ft: brown tan orange silty CLAY with sand (CL)	4.0 ft recovery
24.0 - 27.2 ft: brown tan orange silty CLAY with sand (CL)	3.2 ft recovery

DPT boring terminated @ 27.2 ft bgs
HSA boring terminated / bottom of well @ 30 ft bgs
top of screen @ 15 ft bgs
sand to 13 ft bgs
bentonite chips to surface

BORING LOG: RMW-04

SITE:	**Former Macon Telegraph Publishing Company**	LOCATION:	**Macon, GA**
		PROJECT NO.:	—
BORING NO.:	**RMW-04**	BORING DATE:	**4-May-2017**
METHOD:	**DPT / HSA**	BIT DIA.:	**2.25" / 6.5"**
TOTAL DEPTH:	**25 ft BGS**	GROUND EL.:	**Not Surveyed**
DRILLING CO.:	**Atlas-Geo Sampling Company**	START TIME:	**0850**
DRILLER:	**Mike Spath**	RIG:	**Power Probe Truck Mount**
LOGGER:	**Michael Patinkin**	REVIEWER:	**Brian Steele**

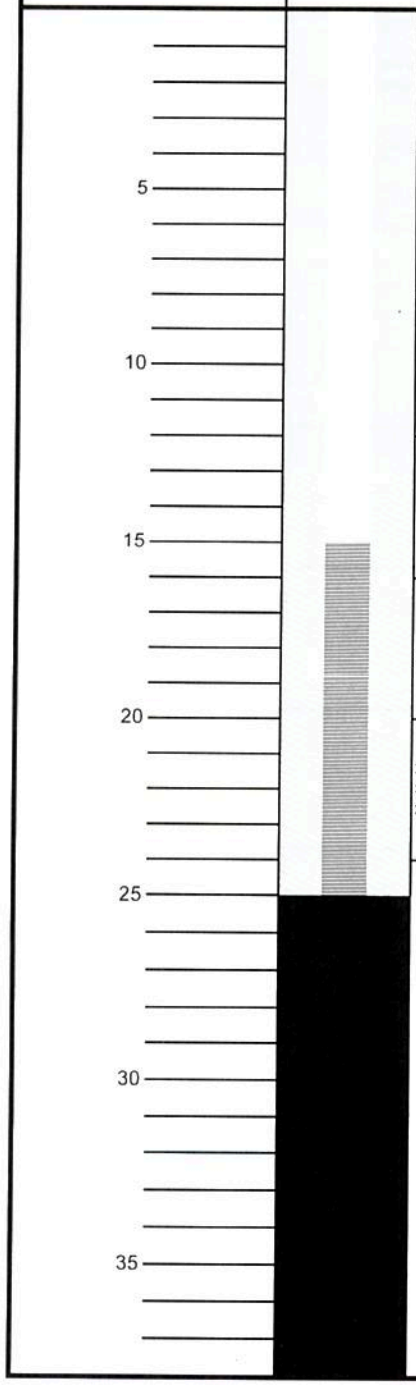


LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 0.9 ft: black gray well graded GRAVEL with sand (GW); aspalt 0.9 - 1.8 ft: black brown poorly graded medium GRAVEL with sand & clay (GP-GC) 1.8 - 3.5 ft: orange tan poorly graded fine SAND with clay (SP-SC)	3.5 ft recovery PID: 1.3 ppm
4.0 - 5.0 ft: orange tan poorly graded fine SAND with clay (SP-SC) 5.0 - 7.7 ft: tan white orange brown poorly graded very fine SAND with silt (SP-SM)	3.7 ft recovery PID: 1.4 ppm
8.0 - 8.7 ft: tan white orange brown poorly graded very fine SAND with silt (SP-SM) 8.7 - 11.6 ft: brown tan gray orange poorly graded very fine silty SAND (SM)	3.6 ft recovery PID: 0.9 ppm moist @ 8 ft
12.0 - 16.0 ft: brown tan gray orange poorly graded very fine silty SAND (SM)	4.0 ft recovery PID: 0.1 ppm
16.0 - 17.0 ft: brown tan gray orange poorly graded very fine silty SAND (SM) 17.0 - 18.9 ft: brown orange poorly graded fine SAND with silt (SP-SM) 18.9 - 19.9 ft: orange white silty SAND with clay (SM-SC)	3.9 ft recovery wet @ 17 ft
20.0 - 20.5 ft: orange white silty SAND with clay (SM-SC) 20.5 - 20.6 ft: red sandy CLAY (CL) 20.6 - 20.9 ft: brown red poorly graded fine clayey SAND (SC) 20.9 - 22.3 ft: tan orange white poorly graded fine SAND with silt (SP-SM)	2.3 ft recovery

DPT boring terminated @ 22.3 ft bgs
HSA boring terminated / bottom of well @ 25 ft bgs
top of screen @ 10 ft bgs
sand to 8 ft bgs
bentonite chips to surface

BORING LOG: RMW-05

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-05	BORING DATE:	3-May-2017
METHOD:	DPT / HSA	BIT DIA.:	2.25" / 6.5"
TOTAL DEPTH:	24 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1555
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele



LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 1.0 ft: black gray well graded GRAVEL with sand (GW); aspalt 1.0 - 1.6 ft: brown red poorly graded cobble GRAVEL with clay (GP-GC) 1.6 - 3.5 ft: dark red CLAY with trace sand (CL)	3.5 ft recovery PID: 1.4 ppm
4.0 - 6.0 ft: dark red CLAY with sand (CL) 6.0 - 8.0 ft: red orange tan sandy CLAY (CL)	4.0 ft recovery PID: 2.2 ppm
8.0 - 10.0 ft: red orange tan sandy CLAY (CL) 10.0 - 12.0 ft: red brown well graded fine to medium clayey SAND (SC)	4.0 ft recovery PID: 3.1 ppm moist @ 10 ft
12.0 - 14.2 ft: red brown well graded fine to medium clayey SAND (SC) 14.2 - 14.9 ft: red orange tan silty CLAY with sand (CL) 14.9 - 15.4 ft: orange tan silty SAND with clay (SM-SC) 15.4 - 16.9 ft: orange tan white silty SAND (SM)	3.9 ft recovery PID: 2.8 ppm
16.0 - 20.0 ft: brown orange white poorly graded fine SAND with silt (SP-SM)	4.0 ft recovery wet @ 16 ft saturated @ 16.5 ft
20.0 - 23.1 ft: brown orange white poorly graded fine SAND with silt (SP-SM) 23.1 - 24.0 ft: gray brown black poorly graded very fine silty SAND (SM)	4.0 ft recovery moist to wet @ 23.1 ft

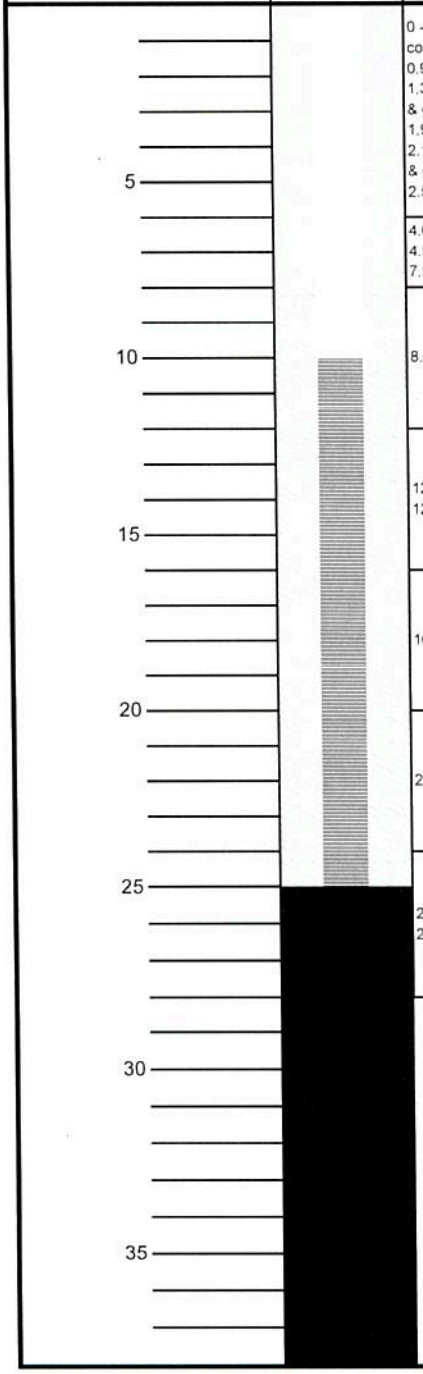
DPT boring terminated @ 24 ft bgs
HSA boring terminated / bottom of well @ 25 ft bgs
top of screen @ 15 ft bgs
sand to 13 ft bgs
bentonite chips to surface

BORING LOG: RMW-06

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-06	BORING DATE:	3-May-2017
METHOD:	DPT / HSA	BIT DIA.:	2.25" / 6.5"
TOTAL DEPTH:	26.5 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1308
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE (BGS))

WELL CONSTRUCTION DIAGRAM



LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 0.9 ft: gray white well graded GRAVEL with very fine sand (GW); concrete 0.9 - 1.3 ft: dark gray poorly graded medium SAND with gravel (SP) 1.3 - 1.9 ft: dark brown black brown poorly graded medium SAND with clay & gravel (SP-SC) 1.9 - 2.1 ft: red well graded GRAVEL (GW); possible brick 2.1 - 2.5 ft: dark brown black brown poorly graded medium SAND with clay & gravel (SP-SC) 2.5 - 3.5 ft: brown gray orange red poorly graded fine clayey SAND (SC)	3.5 ft recovery PID: 1.6 ppm
4.0 - 4.5 ft: brown gray orange red poorly graded fine clayey SAND (SC) 4.5 - 7.5 ft: brown orange red gray sandy CLAY (CL) 7.5 - 8.0 ft: brown orange red gray clayey SAND (SC)	4.0 ft recovery PID: 1.0 ppm moist @ 8 ft
8.0 - 12.0 ft: brown orange red clayey SAND (SC)	4.0 ft recovery PID: 1.5 ppm wet @ 10 ft
12.0 - 12.5 ft: brown orange red clayey SAND (SC) 12.5 - 15.4 ft: gray brown clayey SILT with sand (ML)	3.4 ft recovery PID: 2.2 ppm dry to moist @ 12 ft
16.0 - 20.0 ft: gray brown clayey SILT with sand (ML)	4.0 ft recovery PID: 1.2 ppm
20.0 - 24.0 ft: gray brown sandy SILT with clay (ML)	4.0 ft recovery PID: 1.0 ppm
24.0 - 26.0 ft: gray brown sandy SILT with clay (ML) 26.0 - 26.5 ft: gray silty SAND (SM); partially weathered rock	4.0 ft recovery moist to wet @ 23.1 ft

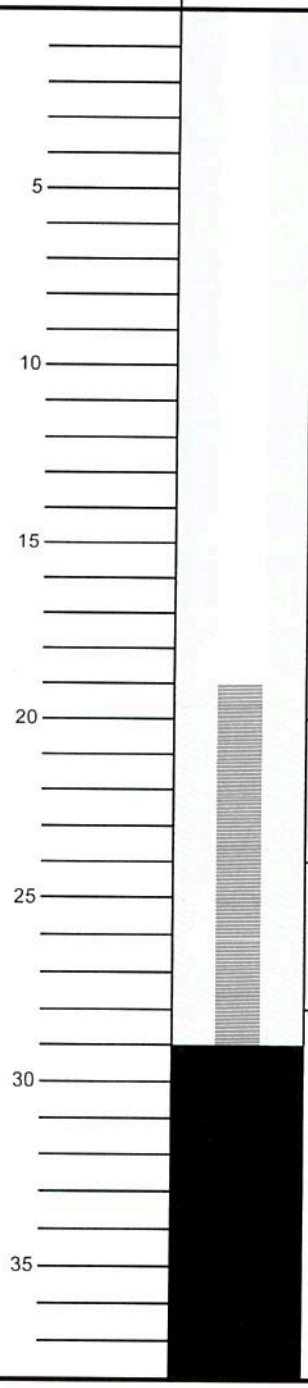
DPT boring terminated @ 26.5 ft bgs
HSA boring terminated / bottom of well @ 25 ft bgs
top of screen @ 10 ft bgs
sand to 8 ft bgs
bentonite chips to surface

BORING LOG: RMW-07

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-07	BORING DATE:	3-May-2017
METHOD:	DPT / HSA	BIT DIA.:	2.25" / 6.5"
TOTAL DEPTH:	29 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	0930
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])

WELL CONSTRUCTION DIAGRAM



LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 1.0 ft: gray white well graded GRAVEL with very fine sand (GW); concrete 1.0 - 1.7 ft: gray red brown poorly graded medium clayey SAND (SC) 1.7 - 3.8 ft: brown black orange poorly graded medium SAND with clay & gravel (SP-SC)	3.8 ft recovery PID: 1.6 ppm
4.0 - 4.5 ft: brown orange poorly graded medium clayey SAND with gravel (SC) 4.5 - 6.7 ft: brown gray orange red CLAY with sand (CL) 6.7 - 8.0 ft: brown red orange gray poorly graded medium clayey SAND (SC)	4.0 ft recovery PID: 2.1 ppm
8.0 - 8.9 ft: brown red orange gray poorly graded medium clayey SAND (SC) 8.9 - 11.7 ft: brown orange gray poorly graded medium to coarse SAND with clay (SP-SC)	3.7 ft recovery PID: 1.5 ppm
12.0 - 13.2 ft: brown orange gray poorly graded medium to coarse SAND with clay (SP-SC) 13.2 - 16.0 ft: gray brown clayey SILT with sand (ML)	4.0 ft recovery PID: 1.5 ppm moist @ 9 ft wet @ 12 ft
16.0 - 20.0 ft: gray brown clayey SILT with sand (ML)	4.0 ft recovery PID: 1.1 ppm dry to moist @ 13.2 ft
20.0 - 21.5 ft: gray brown clayey SILT with sand (ML) 21.5 - 21.8 ft: brown black gray poorly graded clayey pebble GRAVEL (GC); partially weathered rock 21.8 - 23.7 ft: brown orange gray poorly graded fine silty SAND with clay (SM-SC)	3.7 ft recovery PID: 3.6 ppm
24.0 - 28.0 ft: brown orange gray poorly graded fine silty SAND with clay (SM-SC)	4.0 ft recovery wet @ 24 ft

DPT boring terminated @ 24 ft bgs
HSA boring terminated / bottom of well @ 25 ft bgs
top of screen @ 15 ft bgs
sand to 13 ft bgs
bentonite chips to surface

BORING LOG: RMW-08

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-08	BORING DATE:	2-May-2017
METHOD:	DPT	BIT DIA.:	2.25"
TOTAL DEPTH:	27 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1622
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

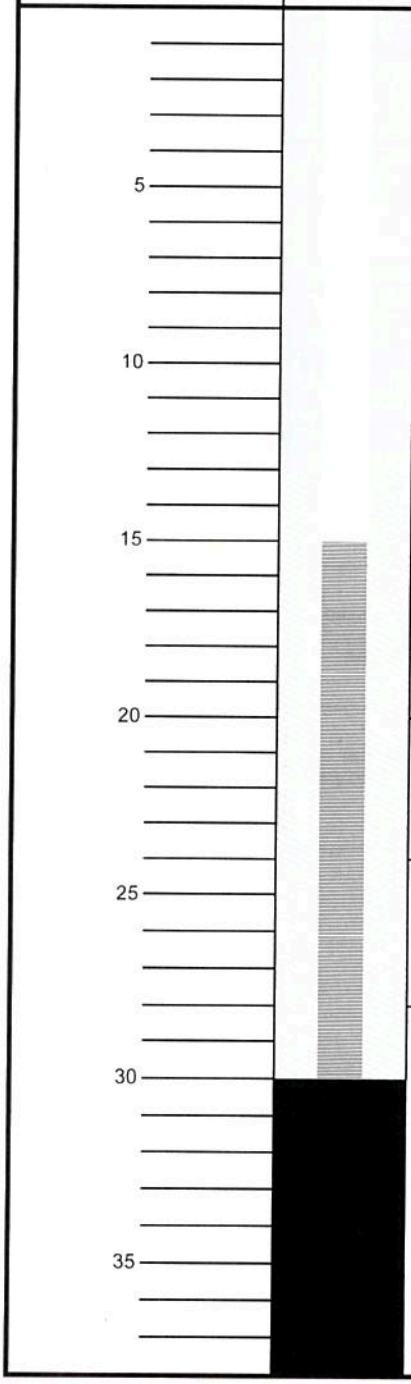
DEPTH (FEET BELOW GROUND SURFACE (BGS))	WELL CONSTRUCTION DIAGRAM	LITHOLOGICAL DESCRIPTION	COMMENTS
0		0 - 0.5 ft: gray black well graded GRAVEL with very fine sand (GW); asphalt 0.5 - 1.5 ft: tan brown well graded fine to medium clayey SAND (SC) 1.5 - 3.4 ft: tan brown orange red sandy CLAY (CL)	3.4 ft recovery PID: 4.7 ppm
5		4.0 - 8.0 ft: orange red white stiff CLAY with trace sand (CL)	4.0 ft recovery PID: 2.6 ppm
10		8.0 - 12.0 ft: gray red white stiff CLAY with trace sand (CL)	4.0 ft recovery PID: 3.6 ppm
15		12.0 - 12.5 ft: brown clayey SILT (ML) 12.5 - 13.0 ft: gray white silty CLAY (CL) 13.0 - 13.4 ft: brown clayey SILT (ML) 13.4 - 16.0 ft: gray white silty CLAY (CL)	4.0 ft recovery PID: 2.5 ppm moist @ 13 ft
20		16.0 - 20.0 ft: brown gray green clayey SILT with sand (ML)	4.0 ft recovery PID: 2.0 ppm
25		20.0 - 21.7 ft: brown gray green clayey SILT with sand (ML) 21.7 - 23.5 ft: gray purple clayey SILT (ML)	3.5 ft recovery PID: 2.7 ppm
		24.0 - 26.0 ft: brown orange gray poorly graded fine silty SAND with clay (SM-SC) 26.0 - 27.0 ft: gray purple clayey SILT (ML)	3.0 ft recovery PID: 1.8 ppm
30		DPT boring terminated @ 27 ft bgs bentonite chips to surface	
35			

BORING LOG: RMW-09

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RMW-09	BORING DATE:	2-May-2017
METHOD:	DPT / HSA	BIT DIA.:	2.25" / 6.5"
TOTAL DEPTH:	30 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1455
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])

WELL CONSTRUCTION DIAGRAM



LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 0.3 ft: gray black well graded GRAVEL with very fine sand (GW); asphalt 0.3 - 2.9 ft: red orange CLAY with trace sand (CL)	2.9 ft recovery PID: 2.6 ppm
4.0 - 8.0 ft: brown orange gray red sandy CLAY (CL)	4.0 ft recovery PID: 7.4 ppm
8.0 - 12.0 ft: brown orange gray red sandy CLAY (CL)	4.0 ft recovery PID: 9.6 ppm
12.0 - 13.0 ft: brown orange gray red sandy CLAY (CL) 13.0 - 16.0 ft: gray brown white silty CLAY with sand (CL)	4.0 ft recovery PID: 9.7 ppm moist @ 13 ft
16.0 - 19.6 ft: gray brown white silty CLAY with sand (CL) 19.6 - 20.0 ft: brown clayey SILT (ML)	4.0 ft recovery PID: 16.1 ppm
20.0 - 21.1 ft: brown gray silty CLAY (CL) 21.1 - 21.6 ft: brown clayey SILT (ML) 21.6 - 22.0 ft: brown gray silty CLAY (CL) 22.0 - 22.3 ft: brown clayey SILT (ML) 22.3 - 24.0 ft: gray silty CLAY (CL)	4.0 ft recovery PID: 2.5 ppm
	0.0 ft recovery

DPT boring terminated @ 28 ft bgs
HSA boring terminated / bottom of well @ 30 ft bgs
top of screen @ 15 ft bgs
sand to 13 ft bgs
bentonite chips to surface

BORING LOG: RSB-01

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RSB-01	BORING DATE:	1-May-2017
METHOD:	DPT	BIT DIA.:	2.25"
TOTAL DEPTH:	24 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1622
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])

WELL CONSTRUCTION DIAGRAM

LITHOLOGICAL DESCRIPTION	COMMENTS
0 - 0.5 ft: gray black well graded GRAVEL with very fine sand (GW); asphalt 0.5 - 0.9 ft: red orange CLAY with silt (CL) 0.9 - 3.4 ft: brown gray red orange sandy CLAY (CL)	3.4 ft recovery PID: 2.4 ppm
4.0 - 7.6 ft: brown gray red orange sandy CLAY (CL)	3.6 ft recovery PID: 1.2 ppm
8.0 - 8.5 ft: brown gray red orange sandy CLAY (CL) 8.5 - 12.0 ft: gray brown orange white poorly graded fine clayey SAND (SC)	4.0 ft recovery PID: 1.2 ppm
12.0 - 16.0 ft: gray brown orange white poorly graded fine clayey SAND (SC)	4.0 ft recovery PID: 1.6 ppm
16.0 - 17.3 ft: gray brown orange white poorly graded fine clayey SAND (SC) 17.3 - 19.9 ft: orange gray brown poorly graded fine silty SAND (SM)	3.9 ft recovery PID: 1.4 ppm
20.0 - 22.9 ft: orange gray brown poorly graded fine silty SAND (SM) 22.9 - 23.4 ft: orange gray brown poorly graded fine silty SAND with gravel (SM)	3.5 ft recovery wet @ 20 ft
DPT boring terminated @ 24 ft bgs bentonite chips to surface	

5 10 15 20 25 30 35

BORING LOG: RSB-02

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RSB-02	BORING DATE:	1-May-2017
METHOD:	DPT	BIT DIA.:	2.25"
TOTAL DEPTH:	28 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1508
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])	WELL CONSTRUCTION DIAGRAM	LITHOLOGICAL DESCRIPTION	COMMENTS
0		0 - 0.7 ft: gray black well graded GRAVEL with sand (GW); asphalt 0.7 - 2.8 ft: red orange CLAY with silt (CL)	2.8 ft recovery PID: 1.3 ppm
5		4.0 - 4.4 ft: red orange CLAY with silt (CL) 4.4 - 4.7 ft: red orange black gray gravely CLAY with sand (CL) 4.7 - 8.0 ft: tan brown orange well graded fine to medium clayey SAND with trace gravel (SC)	4.0 ft recovery PID: 1.7 ppm
10		8.0 - 12.0 ft: tan brown orange well graded fine to medium clayey SAND with trace gravel (SC)	4.0 ft recovery PID: 1.0 ppm
15		12.0 - 13.2 ft: tan brown orange well graded fine to medium clayey SAND with trace gravel (SC) 13.2 - 14.0 ft: tan white brown well graded fine to medium SAND with gravel (SW); partially weathered rock 14.0 - 16.0 ft: orange brown tan sandy SILT (ML) with clay	4.0 ft recovery PID: 1.0 ppm
20		16.0 - 18.0 ft: orange brown tan sandy SILT (ML) with clay 18.0 - 20.0 ft: orange brown white silty CLAY (CL)	4.0 ft recovery PID: 2.0 ppm
		20.0 - 22.7 ft: orange brown white silty CLAY (CL) 22.7 - 23.2 ft: orange brown white silty CLAY with sand (CL)	3.2 ft recovery wet @ 20 ft
25		24.0 - 27.0 ft: orange brown white silty CLAY with sand (CL) 27.0 - 27.6 ft: orange red CLAY with gravel (CL) 27.6 - 27.9 ft: gray poorly graded clayey very fine SAND (SC)	3.9 ft recovery
30		DPT boring terminated @ 28 ft bgs bentonite chips to surface	
35			

BORING LOG: RSB-03

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RSB-03	BORING DATE:	1-May-2017
METHOD:	DPT	BIT DIA.:	2.25"
TOTAL DEPTH:	28 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1358
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE (BGS))	WELL CONSTRUCTION DIAGRAM	LITHOLOGICAL DESCRIPTION	COMMENTS
		0 - 0.6 ft: gray black well graded GRAVEL with sand (GW); asphalt 0.6 - 3.1 ft: red orange CLAY with silt (CL)	3.1 ft recovery PID: 1.3 ppm
5		4.0 - 4.6 ft: orange brown gray well graded clayey SAND with silt (SC) 4.6 - 8.0 ft: orange brown gray red CLAY with sand (CL)	4.0 ft recovery PID: 0.4 ppm
10		8.0 - 12.0 ft: orange brown gray red CLAY with silt & trace sand (CL)	4.0 ft recovery PID: 1.2 ppm
15		12.0 - 12.5 ft: orange brown gray red CLAY with silt & trace sand (CL) 12.5 - 16.0 ft: orange brown tan black poorly graded fine clayey SAND (SC)	4.0 ft recovery PID: 0.5 ppm
20		16.0 - 16.8 ft: orange brown tan black poorly graded fine clayey SAND (SC) 16.8 - 18.9 ft: gray tan orange black poorly graded very fine SAND with clay (SP-SC) 18.9 - 20.0 ft: gray tan poorly graded fine clayey SAND (SC)	4.0 ft recovery PID: 0.9 ppm
25		20.0 - 20.8 ft: gray tan poorly graded fine clayey SAND (SC) 20.8 - 24.0 ft: orange gray black poorly graded fine clayey SAND (SC)	4.0 ft recovery wet @ 22 ft
		24.0 - 28.0 ft: orange gray black poorly graded fine clayey SAND (SC)	4.0 ft recovery
30		DPT boring terminated @ 28 ft bgs bentonite chips to surface	
35			

BORING LOG: RSB-04

SITE:	Former Macon Telegraph Publishing Company	LOCATION:	Macon, GA
		PROJECT NO.:	—
BORING NO.:	RSB-04	BORING DATE:	4-May-2017
METHOD:	DPT	BIT DIA.:	2.25"
TOTAL DEPTH:	28 ft BGS	GROUND EL.:	Not Surveyed
DRILLING CO.:	Atlas-Geo Sampling Company	START TIME:	1055
DRILLER:	Mike Spath	RIG:	Power Probe Truck Mount
LOGGER:	Michael Patinkin	REVIEWER:	Brian Steele

DEPTH (FEET BELOW GROUND SURFACE [BGS])	WELL CONSTRUCTION DIAGRAM	LITHOLOGICAL DESCRIPTION	COMMENTS
0		0 - 1.0 ft: black brown well graded GRAVEL with sand (GW); asphalt 1.0 - 1.5 ft: black brown poorly graded GRAVEL with clay & sand (GP-GC) 1.5 - 3.6 ft: red sandy CLAY (CL)	3.6 ft recovery PID: 0.8 ppm
5		4.0 - 6.5 ft: red orange poorly graded coarse clayey SAND (SC) 6.5 - 7.5 ft: orange tan well graded fine to medium SAND (SW)	3.5 ft recovery PID: 0.1 ppm
10		8.0 - 8.5 ft: orange tan well graded fine to medium SAND (SW) 8.5 - 11.9 ft: brown red gray clayey SILT (ML)	3.9 ft recovery PID: 0.2 ppm moist @ 8 ft
15		12.0 - 14.2 ft: brown red gray clayey SILT (ML) 14.2 - 15.7 ft: brown tan gray silty CLAY (CL)	3.7 ft recovery PID: 0.1 ppm
20		16.0 - 16.4 ft: brown tan gray clayey SILT with sand (ML) 16.4 - 20.0 ft: orange brown gray silty SAND with clay (SM-SC)	4.0 ft recovery wet @ 16 ft
25		20.0 - 22.5 ft: gray orange brown silty SAND (SM) 22.5 - 24.0 ft: brown gray clayey SAND with silt (SC-SM)	4.0 ft recovery saturated @ 21 ft
30		24.0 - 26.8 ft: brown gray clayey SAND with silt (SC-SM) 26.8 - 27.5 ft: tan poorly graded fine clayey SAND (SC) 27.5 - 28.0 ft: tan gray poorly graded very fine silty SAND (SM)	4.0 ft recovery
35		DPT boring terminated @ 28 ft bgs bentonite chips to surface	

APPENDIX D

DATA TABLES

Table 1
Monitoring Well Construction Data
Former Macon Telegraph Publishing Company
Macon, GA

Well ID	Latitude (DD)	Longitude (DD)	Top of Casing Elevation (ft NAVD 88)	Total Depth (ft BTOC)	Well Bottom Elevation (ft NAVD 88)	Top of Screen Elevation (ft NAVD 88)
RMW-01	32.838564	-83.623507	316.29	33.38	282.91	292.91
RMW-02	32.838240	-83.623486	316.99	29.65	287.34	297.34
RMW-03	32.837994	-83.623021	314.41	29.71	284.70	299.70
RMW-04	32.838338	-83.622400	305.54	24.22	281.32	296.32
RMW-05	32.838040	-83.621915	304.68	25.12	279.56	289.56
RMW-06	32.837647	-83.621722	304.56	24.92	279.64	294.64
RMW-07	32.837423	-83.621891	306.08	28.70	277.38	287.38
RMW-08	32.837205	-83.622303	—	—	—	—
RMW-09	32.837057	-83.622243	311.96	29.74	282.22	297.22

Notes:

1. Data derived from well construction records & survey work conducted by Resolute field staff on 11 May 2017.

DD - decimal degrees

NAVD 88 - North American Vertical Datum of 1988

ft BTOC - feet below top of casing

— - RMW-08 not installed as planned. Soils from this boring were determined in-field to have poor groundwater transmission potential.

Table 2
Groundwater Elevation Data
Former Macon Telegraph Publishing Company
Macon, GA

		Collection Date	05/11/17	
		Start Collection	7:20	
		Stop Collection	10:55	
Well ID	**Top of Casing Elevation (ft NAVD 88)**	**Well Bottom Elevation (ft NAVD 88)**	**Depth to Groundwater (ft BTOC)**	**Groundwater Elevation (ft NAVD 88)**
RMW-01	316.29	282.91	30.20	286.09
RMW-02	316.99	287.34	23.54	293.45
RMW-03	314.41	284.70	20.44	293.97
RMW-04	305.54	281.32	21.85	283.69
RMW-05	304.68	279.56	17.82	286.86
RMW-06	304.56	279.64	15.86	288.70
RMW-07	306.08	277.38	11.36	294.72
RMW-09	311.96	282.22	8.00	303.96

Notes:
NAVD 88 - North American Vertical Datum of 1988
ft BTOC - feet below top of casing

Table 3
Soil Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

		Sample ID	RSB-01	RMW-01	DUP-01 (RMW-01)	RSB-02	RSB-03	RMW-02
		Date/Time	5/1/17 17:30	5/2/17 9:15	5/2/17 9:15	5/1/17 16:00	5/1/17 15:00	5/1/17 10:45
		Collection Depth (ft bgs)	0.5 - 3.4	16.0 - 20.0	16.0 - 20.0	16.0 - 20.0	0.6 - 3.1	20.0 - 23.9
		Photoionization Detector Response (ppm)	2.4	1.9	1.9	2.0	1.3	1.3
Substance	**EPD HSRA NC**	**EPD USTMP DL**						
Volatile Organic Compounds (VOCs) via EPA Method 8260								
Methyl acetate	**NE**	**NE**	ND (0.0035)	ND (0.0034)	ND (0.0038)	ND (0.0046)	ND (0.0038)	ND (0.0039)
Methyl tert-butyl ether	**NE**	**NE**	ND (0.0035)	ND (0.0034)	ND (0.0038)	ND (0.0046)	ND (0.0038)	ND (0.0039)
RCRA Metals via EPA Method 6010 & 7471								
Arsenic	**41.00**	**NE**	ND (4.45)	ND (4.67)	ND (4.73)	ND (4.93)	ND (4.89)	ND (5.23)
Barium	**500**	**NE**	40.0	122	273	420	54.0	86.9
Chromium	**1,200.00**	**NE**	12.9	5.98	3.41	21.7	9.01	3.05
Lead	**400.00**	**NE**	23.2	5.99	16.8	5.46	14.7	ND (5.23)
Total Petroleum Hydrocarbons (TPH) via EPA Method 8015								
Diesel Range Organics (DRO)	**NE**	**10**	19	ND (8.4)	ND (8.3)	ND (9.1)	19	ND (8.7)

Notes:
All concentrations displayed in milligrams per kilogram (mg/kg)
ft bgs - feet below ground surface
ppm - parts per million
EPD - Georgia Envrionmental Protection Division
HSRA NC - Hazardous Site Response Act Notification Criteria
USTMP DL - Underground Storage Tank Management Program Detection Limit
NE - not established
RCRA - Resource Conservation and Recovery Act
ND - not detected above reporting limit shown in parentheses
Concentrations in **bold** exceed HSRA NC

Table 3
Soil Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

Sample ID			RMW-03	RMW-04	RSB-04	RMW-05	RMW-06	RMW-07
Date/Time			5/2/17 13:15	5/4/17 10:30	5/4/17 12:30	5/3/17 17:15	5/3/17 14:50	5/3/17 11:00
Collection Depth (ft bgs)			0.9 - 2.7	4.0 - 7.7	1.0 - 3.6	8.0 - 12.0	12.0 - 15.4	20.0 - 24.0
Photoionization Detector Response (ppm)			3.7	1.4	0.8	3.1	2.2	3.6
Substance	EPD HSRA NC	EPD USTMP DL						
Volatile Organic Compounds (VOCs) via EPA Method 8260								
Methyl acetate	NE	NE	ND (0.0032)	ND (0.0041)	ND (0.0035)	ND (0.0033)	ND (0.0019)	ND (0.0037)
Methyl tert-butyl ether	NE	NE	ND (0.0032)	ND (0.0041)	ND (0.0035)	ND (0.0033)	ND (0.0019)	ND (0.0037)
RCRA Metals via EPA Method 6010 & 7471								
Arsenic	41.00	NE	ND (4.30)	ND (4.42)	ND (4.33)	ND (4.22)	ND (4.40)	26.5
Barium	500	NE	11.2	99.3	27.8	27.5	157	297
Chromium	1,200.00	NE	23.0	ND (2.21)	25.8	16.2	16.7	13.1
Lead	400.00	NE	4.62	9.66	9.85	5.93	6.31	ND (4.65)
Total Petroleum Hydrocarbons (TPH) via EPA Method 8015								
Diesel Range Organics (DRO)	NE	10	ND (8.0)	ND (8.0)	12	ND (7.8)	ND (8.2)	ND (8.7)

Notes:

All concentrations displayed in milligrams per kilogram (mg/kg)

ft bgs - feet below ground surface

ppm - parts per million

EPD - Georgia Envrionmental Protection Division

HSRA NC - Hazardous Site Response Act Notification Criteria

USTMP DL - Underground Storage Tank Management Program Detection Limit

NE - not established

RCRA - Resource Conservation and Recovery Act

ND - not detected above reporting limit shown in parentheses

Concentrations in **bold** exceed HSRA NC

Table 3
Soil Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

		Sample ID	RMW-08	RMW-09
		Date/Time	5/2/17 17:40	5/2/17 16:00
		Collection Depth (ft bgs)	0.5 - 3.4	16.0 - 20.0
		Photoionization Detector Response (ppm)	4.7	16.1
Substance	**EPD HSRA NC**	**EPD USTMP DL**		
Volatile Organic Compounds (VOCs) via EPA Method 8260				
Methyl acetate	**NE**	**NE**	ND (0.0033)	0.045
Methyl tert-butyl ether	**NE**	**NE**	ND (0.0033)	0.044
RCRA Metals via EPA Method 6010 & 7471				
Arsenic	**41.00**	**NE**	ND (4.32)	ND (4.48)
Barium	**500**	**NE**	13.5	132
Chromium	**1,200.00**	**NE**	28.4	17.9
Lead	**400.00**	**NE**	4.95	9.53
Total Petroleum Hydrocarbons (TPH) via EPA Method 8015				
Diesel Range Organics (DRO)	**NE**	**10**	ND (7.8)	ND (8.3)

Notes:
All concentrations displayed in milligrams per kilogram (mg/kg)
ft bgs - feet below ground surface
ppm - parts per million
EPD - Georgia Envrionmental Protection Division
HSRA NC - Hazardous Site Response Act Notification Criteria
USTMP DL - Underground Storage Tank Management Program Detection Limit
NE - not established
RCRA - Resource Conservation and Recovery Act
ND - not detected above reporting limit shown in parentheses
Concentrations in **bold** exceed HSRA NC

Table 4
Groundwater Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

	Sample ID	RMW-01	RMW-02	DUP-01 (RMW-02)	RMW-03	RMW-04	RMW-05	RMW-06
	Date/Time	—	5/10/17 16:00	5/10/17 16:00	5/10/17 16:00	5/11/17 8:50	5/11/17 8:50	5/11/17 10:06
Substance	EPD HSRA NC							
Volatile Organic Compounds (VOCs) via EPA Method 8260								
1,2-Dibromo-3-chloropropane	0.2	—	ND (5.0)	ND (5.0)	ND (5.0)	**7.5**	ND (5.0)	ND (5.0)
2-Hexanone	NE	—	ND (10)	ND (10)	ND (10)	70	ND (10)	ND (10)
4-Methyl-2-pentanone	2,000	—	ND (10)	ND (10)	ND (10)	26	ND (10)	ND (10)
Acetone	4,000	—	ND (50)	ND (50)	ND (50)	52	ND (50)	ND (50)
Benzene	5	—	ND (5.0)	ND (5.0)	ND (5.0)	**540**	ND (5.0)	ND (5.0)
Cyclohexane	NE	—	ND (5.0)	ND (5.0)	ND (5.0)	96	ND (5.0)	ND (5.0)
Ethylbenzene	700	—	ND (5.0)	ND (5.0)	ND (5.0)	**1,700**	ND (5.0)	ND (5.0)
Isopropylbenzene	NE	—	ND (5.0)	ND (5.0)	ND (5.0)	89	ND (5.0)	ND (5.0)
Methyl acetate	NE	—	ND (5.0)	ND (5.0)	ND (5.0)	19	ND (5.0)	ND (5.0)
Methyl tert-butyl ether	NE	—	ND (5.0)	ND (5.0)	ND (5.0)	6.2	ND (5.0)	ND (5.0)
Methylcyclohexane	NE	—	ND (5.0)	ND (5.0)	ND (5.0)	69	ND (5.0)	ND (5.0)
Styrene	100	—	ND (5.0)	ND (5.0)	ND (5.0)	**150**	ND (5.0)	ND (5.0)
Tetrachloroethene	5	—	**130**	**140**	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Toluene	1,000	—	ND (5.0)	ND (5.0)	ND (5.0)	240	ND (5.0)	ND (5.0)
Trichloroethene	5	—	ND (5.0)	ND (5.0)	ND (5.0)	**6.2**	ND (5.0)	ND (5.0)
Xylenes, total	10,000	—	ND (5.0)	ND (5.0)	ND (5.0)	7,100	ND (5.0)	ND (5.0)
RCRA Metals via EPA Method 6010 & 7471								
Barium	2,000	—	314	305	155	254	50.6	146
Total Petroleum Hydrocarbons (TPH) via EPA Method 8015								
Diesel Range Organics (DRO)	NE	—	ND (170)	ND (170)	ND (170)	6,700	ND (170)	ND (170)
Gasoline Range Organics (GRO)	NE	—	ND (500)	ND (500)	ND (500)	31,000	ND (500)	ND (500)

Notes:
All concentrations displayed in micrograms per liter (µg/L)
EPD - Georgia Envrionmental Protection Division
HSRA NC - Hazardous Site Response Act Notification Criteria
GA Instream WQS - Georgia Instream Water Quality Standards
NE - not established
RCRA - Resource Conservation and Recovery Act
— - unable to properly develop or sample RMW-01 after installation
(low volume of turbid groundwater in well)
ND - not detected above reporting limit
Concentrations in **bold** exceed HSRA NC

Table 4
Groundwater Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

	Sample ID	RMW-07	RMW-09
	Date/Time	5/11/17 12:06	5/11/17 12:25
Substance	**EPD HSRA NC**		
Volatile Organic Compounds (VOCs) via EPA Method 8260			
1,2-Dibromo-3-chloropropane	**0.2**	ND (5.0)	ND (5.0)
2-Hexanone	**NE**	ND (10)	ND (10)
4-Methyl-2-pentanone	**2,000**	ND (10)	ND (10)
Acetone	**4,000**	ND (50)	ND (50)
Benzene	**5**	ND (5.0)	ND (5.0)
Cyclohexane	**NE**	ND (5.0)	ND (5.0)
Ethylbenzene	**700**	ND (5.0)	ND (5.0)
Isopropylbenzene	**NE**	ND (5.0)	ND (5.0)
Methyl acetate	**NE**	ND (5.0)	ND (5.0)
Methyl tert-butyl ether	**NE**	ND (5.0)	1,500
Methylcyclohexane	**NE**	ND (5.0)	ND (5.0)
Styrene	**100**	ND (5.0)	ND (5.0)
Tetrachloroethene	**5**	ND (5.0)	ND (5.0)
Toluene	**1,000**	ND (5.0)	ND (5.0)
Trichloroethene	**5**	ND (5.0)	ND (5.0)
Xylenes, total	**10,000**	ND (5.0)	ND (5.0)
RCRA Metals via EPA Method 6010 & 7471			
Barium	**2,000**	247	913
Total Petroleum Hydrocarbons (TPH) via EPA Method 8015			
Diesel Range Organics (DRO)	**NE**	ND (170)	ND (170)
Gasoline Range Organics (GRO)	**NE**	ND (500)	2,800

Notes:
All concentrations displayed in micrograms per liter (µg/L)
EPD - Georgia Envrionmental Protection Division
HSRA NC - Hazardous Site Response Act Notification Criteria
GA Instream WQS - Georgia Instream Water Quality Standards
NE - not established
RCRA - Resource Conservation and Recovery Act
— - unable to properly develop or sample RMW-01 after installation
(low volume of turbid groundwater in well)
ND - not detected above reporting limit
Concentrations in **bold** exceed HSRA NC

Table 5
EPA VISL Calculator Results
Former Macon Telegraph Publishing Company
Macon, GA

Substance	Site Groundwater Concentration (µg/L)	Calculated Indoor Air Concentration (µg/m^3)	VI Carcinogenic Risk	VI Hazard
1,2-Dibromo-3-chloropropane	7.5	4.5E-02	**2.2E-05**	5.1E-02
2-Hexanone	70	2.7E-01	No IUR	2.0E-03
4-Methyl-2-pentanone	26	1.5E-01	No IUR	1.1E-05
Acetone	52	7.4E-02	No IUR	5.5E-07
Benzene	540	1.2E+02	**7.8E-05**	9.3E-01
Cyclohexane	96	5.9E+02	No IUR	2.2E-02
Ethylbenzene	1,700	5.5E+02	**1.1E-04**	1.3E-01
Methyl tert-butyl ether	1,500	3.6E+01	7.6E-07	2.7E-03
Styrene	150	1.7E+01	No IUR	3.9E-03
Tetrachloroethene	140	1.0E+02	2.1E-06	5.8E-01
Toluene	240	6.5E+01	No IUR	3.0E-03
Trichloroethene	6.2	2.5E+00	8.3E-07	2.9E-01
Xylenes, total	7,100	1.9E+03	No IUR	**4.4E+00**

Notes:

EPA VISL - United States Environmental Protection Agency Vapor Instrusion Screening Level

Substances displayed are those with site groundwater analytical detections and which have inhalation toxicity data.

Site Groundwater Concentration values taken from the highest site groundwater analytical detections.

Calculated Indoor Air Concentration determined from the site groundwater concentration, using the EPA VISL Calculator with generic attenuation factor for indoor air from groundwater

VI Carcinogenic Risk - carcinogenic risk from the vapor intrusion pathaway for the substance, calculated using the EPA VISL Calculator with default exposure parameters for commerical exposure. Concentrations in **bold** exceed the GA EPD Target Risk for Carcinogens (1.00E-05).

VI Hazard - noncancer hazard from the vapor intrusion pathway for the chemical, calculated using the EPA VISL Calculator with default parameters for commerical exposure. Concentrations in **bold** exceed the Target Hazard Quotient for Non-Carcinogens (1).

IUR - Inhalation Unit Risk factor, from the EPA Regional Screening Levels (RSL) worksheet. This is the potential carcinogenic risk per unit concentration exposure associated with inhalation of the chemical.

Table 6
Waste Material Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

		Rubble			
		Total Constiuent Basis (mg/kg)		TCLP (mg/L)	
Sample ID		WPR	EPR	WPR	EPR
Date/Time		5/17/17 14:00	5/17/17 14:15	5/17/17 14:00	5/17/17 14:15
Substance	**TCLP MC**				
Semivolatile Organic Compounds (SVOCs)					
Bis(2-ethylhexyl)phthalate	**NE**	60	ND (63)	NA	NA
Butyl benzyl phthalate	**NE**	480	ND (63)	NA	NA
Volatile Organic Compounds (VOCs)					
Methyl acetate	**NE**	1.5	ND (0.41)	NA	NA
Styrene	**NE**	ND (0.24)	ND (5.7)	NA	NA
RCRA Metals					
Barium	**100.0**	249	ND (4.67)	ND (0.500)	ND (0.500)
Cadmium	**1.0**	14.3	122	ND (0.0250)	ND (0.0250)
Chromium	**5.0**	34.4	5.98	ND (0.0500)	ND (0.0500)
Lead	**5.0**	608	5.99	ND (0.0500)	ND (0.0500)
Merucry	**0.2**	0.545	5.99	ND (0.00400)	ND (0.00400)

Notes:

TCLP MC - Maximum Concentration of Contaminants for Toxicity Characteristic Leaching Procedure (mg/L)

WPR - Composite Press Room Sample

EPR - Ink Room Room Sample

IRS - Ink Room Sump Sample

SS - Sub-Basement Sump Sample

NE - not established

RCRA - Resource Conservation and Recovery Act

ND - not detected above reporting limit shown in parentheses

Concentrations in **bold** exceed TCLP regulatory level (none)

Table 6
Waste Material Analytical Detections
Former Macon Telegraph Publishing Company
Macon, GA

		Sump Water (mg/L)	
Sample ID		IRS	SS
Date/Time		05/17/17 15:00	05/17/17 15:30
Substance	**TCLP MC**		
Semivolatile Organic Compounds (SVOCs)			
Bis(2-ethylhexyl)phthalate	**NE**	ND (0.01)	ND (0.01)
Butyl benzyl phthalate	**NE**	ND (0.01)	ND (0.01)
Volatile Organic Compounds (VOCs)			
Methyl acetate	**NE**	ND (0.0050)	ND (0.0050)
Styrene	**NE**	ND (0.0050)	ND (0.0050)
RCRA Metals			
Barium	**100.0**	0.0580	0.0740
Cadmium	**1.0**	ND (0.0050)	ND (0.0050)
Chromium	**5.0**	ND (0.0100)	ND (0.0100)
Lead	**5.0**	ND (0.0100)	ND (0.0100)
Merucry	**0.2**	ND (0.00020)	ND (0.00020)

Notes:

TCLP MC - Maximum Concentration of Contaminants for Toxicity Characteristic Leaching Procedure (mg/L)

WPR - Composite Press Room Sample

EPR - Ink Room Room Sample

IRS - Ink Room Sump Sample

SS - Sub-Basement Sump Sample

NE - not established

RCRA - Resource Conservation and Recovery Act

ND - not detected above reporting limit shown in parentheses

Concentrations in **bold** exceed TCLP regulatory level (none)

APPENDIX E

WELL DEVELOPMENT & GROUNDWATER SAMPLING LOGS

Product Name: Low-Flow System

Date: 2017-05-09 12:14:33

Project Information:		Pump Information:	
Operator Name	Michael Patinkin	Pump Model/Type	GeoPump Peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Phase II ESA	Tubing Diameter	0.17 in
Site Name	Macon Telegraph	Tubing Length	40 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	29 ft

Well Information:		Pumping Information:	
Well ID	RMW-02	Final Pumping Rate	270 mL/min
Well diameter	2 in	Total System Volume	0.2685369 L
Well Total Depth	29.84 ft	Calculated Sample Rate	180 sec
Screen Length	10 ft	Stabilization Drawdown	7.32 in
Depth to Water	23.60 ft	Total Volume Pumped	28 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	11:53:31	360.03	26.61	5.59	170.65	69.40	24.04	4.01	106.35
Last 5	11:56:31	540.03	26.06	5.69	172.06	37.00	24.07	4.19	102.99
Last 5	11:59:31	720.02	26.06	5.68	172.12	25.90	24.11	4.21	106.14
Last 5	12:02:31	900.03	26.06	5.69	171.12	8.18	24.15	4.27	107.97
Last 5	12:05:31	1080.03	26.09	5.66	171.12	6.49	24.16	4.13	110.79
Variance 0			0.00	-0.01	0.05			0.02	3.14
Variance 1			-0.00	0.01	-1.00			0.06	1.83
Variance 2			0.04	-0.03	-0.00			-0.14	2.81

Notes

6 gallons purged with Proactive Waterspout II pump prior to initiating troll. Well development complete.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-09 15:21:28

Project Information:		Pump Information:	
Operator Name	Kevin Stephenson	Pump Model/Type	Geotech peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Telegraph Well Development	Tubing Diameter	.17 in
Site Name	Macon Telegraph	Tubing Length	30 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	364455		
Turbidity Make/Model	LaMotte 2020	Pump placement from TOC	28.69 ft

Well Information:		Pumping Information:	
Well ID	RMW-03	Final Pumping Rate	250 mL/min
Well diameter	2 in	Total System Volume	0.2239027 L
Well Total Depth	29.69 ft	Calculated Sample Rate	180 sec
Screen Length	15 ft	Stabilization Drawdown	49.32 in
Depth to Water	20.31 ft	Total Volume Pumped	3.75 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	15:07:03	180.09	25.58	5.17	83.26	2.89	24.71	3.03	156.16
Last 5	15:10:03	360.03	25.03	5.13	83.61	0.74	24.62	3.01	154.89
Last 5	15:13:03	540.02	24.88	5.14	82.93	0.91	24.53	3.00	154.70
Last 5	15:16:03	720.02	24.76	5.16	83.44	0.68	24.47	2.96	156.64
Last 5	15:19:03	900.02	24.76	5.17	83.47	0.98	24.42	3.13	159.56
Variance 0			-0.15	0.01	-0.68			-0.01	-0.19
Variance 1			-0.12	0.02	0.51			-0.04	1.94
Variance 2			-0.00	0.00	0.03			0.17	2.92

Notes

Pre-purged 12 liters. >5 well volumes.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-10 10:42:18

Project Information:		Pump Information:	
Operator Name	Michael Patinkin	Pump Model/Type	GeoPump Peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Phase II ESA	Tubing Diameter	0.17 in
Site Name	Macon Telegraph	Tubing Length	35 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	24 ft

Well Information:		Pumping Information:	
Well ID	RMW-04	Final Pumping Rate	200 mL/min
Well diameter	2 in	Total System Volume	0.2462198 L
Well Total Depth	24.25 ft	Calculated Sample Rate	180 sec
Screen Length	15 ft	Stabilization Drawdown	28.8 in
Depth to Water	21.85 ft	Total Volume Pumped	6.6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	10:31:33	180.16	25.74	5.78	333.35	8.40	24.95	1.34	93.52
Last 5	10:34:33	360.04	24.50	5.89	325.79	--	--	1.97	83.43
Last 5									
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-1.24	0.11	-7.55			0.63	-10.09
Variance 2			0.00	0.00	0.00			0.00	0.00

Notes

0.5 gallon purged with Proactive Waterspout II & 1.0 gallons purged with peristaltic pump prior to initiating troll. Well dry, but 0.25 more gallons needed to complete development.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-10 11:27:31

Project Information:		Pump Information:	
Operator Name	Michael Patinkin	Pump Model/Type	GeoPump Peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Phase II ESA	Tubing Diameter	0.17 in
Site Name	Macon Telegraph	Tubing Length	34 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	24 ft

Well Information:		Pumping Information:	
Well ID	RMW-04	Final Pumping Rate	140 mL/min
Well diameter	2 in	Total System Volume	0.2417564 L
Well Total Depth	24.25 ft	Calculated Sample Rate	180 sec
Screen Length	10 ft	Stabilization Drawdown	28.8 in
Depth to Water	21.85 ft	Total Volume Pumped	8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	11:12:50	180.11	35.66	5.87	292.42	7.22	23.50	2.83	61.18
Last 5	11:15:50	360.03	27.26	6.03	349.29	3.36	23.60	2.09	61.68
Last 5	11:18:50	540.03	24.56	6.12	363.45	5.28	0.00	2.31	57.53
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-8.39	0.16	56.87			-0.73	0.50
Variance 2			-2.71	0.10	14.17			0.22	-4.15

Notes

Second troll log for RMW-04 development. 0.25 more gallons purged during this troll log, for a total of 2 gallons (i.e. 5 well volumes). Development complete.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-10 13:43:43

Project Information:		Pump Information:	
Operator Name	Michael Patinkin	Pump Model/Type	GeoPump Peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Phase II ESA	Tubing Diameter	0.17 in
Site Name	Macon Telegraph	Tubing Length	35 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	24.5 ft

Well Information:		Pumping Information:	
Well ID	RMW-05	Final Pumping Rate	300 mL/min
Well diameter	2 in	Total System Volume	0.2462198 L
Well Total Depth	25 ft	Calculated Sample Rate	180 sec
Screen Length	10 ft	Stabilization Drawdown	12.84 in
Depth to Water	17.80 ft	Total Volume Pumped	30 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	13:28:34	540.03	25.06	5.01	181.30	120.00	18.71	4.84	132.52
Last 5	13:31:34	720.03	24.84	5.07	182.30	73.30	18.75	5.12	131.59
Last 5	13:34:34	900.03	24.54	5.14	183.04	38.90	18.80	5.46	130.12
Last 5	13:37:34	1080.03	24.46	5.11	182.70	23.10	18.85	5.52	131.67
Last 5	13:40:34	1260.03	24.37	5.07	181.95	13.80	18.87	5.37	133.57
Variance 0			-0.31	0.07	0.74			0.34	-1.46
Variance 1			-0.08	-0.02	-0.34			0.06	1.55
Variance 2			-0.09	-0.05	-0.74			-0.15	1.90

Notes

6.25 gallons purged with Proactive Waterspout II pump prior to initiating troll. Well development complete.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-10 12:16:18

Project Information:		Pump Information:	
Operator Name	Kevin Stephenson	Pump Model/Type	Geotech peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Telegraph Well Development	Tubing Diameter	.17 in
Site Name	Macon Telegraph	Tubing Length	25 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	364455		
Turbidity Make/Model	LaMotte 2020	Pump placement from TOC	24.90 ft

Well Information:		Pumping Information:	
Well ID	RMW-06WD	Final Pumping Rate	100 mL/min
Well diameter	2 in	Total System Volume	0.2015856 L
Well Total Depth	24.94 ft	Calculated Sample Rate	60 sec
Screen Length	15 ft	Stabilization Drawdown	143.64 in
Depth to Water	12.93 ft	Total Volume Pumped	0.3 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	12:11:16	60.03	29.10	6.62	288.76	6.57	24.48	6.69	243.51
Last 5	12:12:16	120.03	27.69	6.60	292.46	4.73	24.78	6.64	263.59
Last 5	12:13:16	180.02	27.04	6.58	297.00	4.40	24.90	6.89	274.13
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			-1.42	-0.02	3.71			-0.04	20.08
Variance 2			-0.65	-0.02	4.53			0.24	10.54

Notes

Recharge for well is very low. >5 well volumes were pre-purged.
Well volume did not permit additional trolling but stability achieved and turbidity below 10 was observed.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-09 17:58:53

Project Information:	
Operator Name	Kevin Stephenson
Company Name	Resolute
Project Name	Telegraph Well Development
Site Name	Macon Telegraph
Latitude	0º 0' 0"
Longitude	0º 0' 0"
Sonde SN	364455
Turbidity Make/Model	LaMotte 2020

Pump Information:	
Pump Model/Type	Geotech peristaltic
Tubing Type	LDPE
Tubing Diameter	.17 in
Tubing Length	28 ft
Pump placement from TOC	26.89 ft

Well Information:	
Well ID	RMW-07WD
Well diameter	2 in
Well Total Depth	27.89 ft
Screen Length	15 ft
Depth to Water	11.47 ft

Pumping Information:	
Final Pumping Rate	400 mL/min
Total System Volume	0.2149758 L
Calculated Sample Rate	180 sec
Stabilization Drawdown	52.32 in
Total Volume Pumped	6 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	17:43:43	180.03	24.78	5.08	209.60	13.60	15.51	3.81	-19.58
Last 5	17:46:43	360.03	24.77	5.10	208.41	11.40	15.64	3.83	-34.55
Last 5	17:49:43	540.02	24.79	5.11	206.91	8.70	15.76	3.73	-36.52
Last 5	17:52:43	720.02	24.74	5.10	204.70	7.74	15.80	3.49	-62.89
Last 5	17:55:43	900.03	24.65	5.10	206.50	9.43	15.83	3.77	-42.15
Variance 0			0.02	0.01	-1.51			-0.09	-1.98
Variance 1			-0.04	-0.01	-2.21			-0.25	-26.37
Variance 2			-0.09	-0.00	1.80			0.28	20.74

Notes

Pre-purged 24 gallons. >5 well volumes.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-09 17:07:46

Project Information:		Pump Information:	
Operator Name	Michael Patinkin	Pump Model/Type	GeoPump Peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Phase II ESA	Tubing Diameter	0.17 in
Site Name	Macon Telegraph	Tubing Length	40 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	29 ft

Well Information:		Pumping Information:	
Well ID	RMW-09	Final Pumping Rate	270 mL/min
Well diameter	2 in	Total System Volume	0.2685369 L
Well Total Depth	29.72 ft	Calculated Sample Rate	180 sec
Screen Length	15 ft	Stabilization Drawdown	200.64 in
Depth to Water	23.61 ft	Total Volume Pumped	75 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	16:47:35	360.05	24.86	5.98	369.82	14.30	23.74	0.63	75.94
Last 5	16:50:35	540.03	24.51	5.97	374.99	14.90	22.79	0.60	74.87
Last 5	16:53:35	720.03	24.42	5.97	375.58	10.11	23.91	0.57	74.72
Last 5	16:56:35	900.03	24.35	6.01	376.65	9.39	23.95	0.53	73.03
Last 5	16:59:38	1083.03	24.23	5.99	377.78	7.30	24.01	0.52	72.59
Variance 0			-0.09	0.01	0.59			-0.03	-0.15
Variance 1			-0.07	0.03	1.07			-0.05	-1.69
Variance 2			-0.12	-0.01	1.14			-0.00	-0.44

Notes

18.5 gallons purged with Proactive Waterspout II prior to initiating troll. Well development complete.

Grab Samples

Product Name: Low-Flow System

Date: 2017-05-10 15:55:54

Project Information:		Pump Information:	
Operator Name	Michael Patinkin	Pump Model/Type	GeoPump Peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Phase II ESA	Tubing Diameter	0.17 in
Site Name	Macon Telegraph	Tubing Length	40 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	440279		
Turbidity Make/Model	LaMotte 2020we	Pump placement from TOC	27 ft

Well Information:		Pumping Information:	
Well ID	RMW-02	Final Pumping Rate	160 mL/min
Well diameter	2 in	Total System Volume	0.2685369 L
Well Total Depth	29.84 ft	Calculated Sample Rate	180 sec
Screen Length	10 ft	Stabilization Drawdown	5.07 in
Depth to Water	23.48 ft	Total Volume Pumped	4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	15:36:25	360.03	28.78	5.51	168.38	23.40	23.72	2.79	118.42
Last 5	15:39:25	540.03	27.71	5.53	168.78	9.67	23.77	3.31	114.89
Last 5	15:42:25	720.03	27.75	5.55	168.74	5.83	23.81	3.51	113.33
Last 5	15:45:25	900.03	27.66	5.55	168.96	3.99	23.84	3.66	113.73
Last 5	15:48:25	1080.03	27.66	5.57	169.30	3.48	23.87	3.71	114.36
Variance 0			0.04	0.02	-0.04			0.20	-1.56
Variance 1			-0.09	0.00	0.22			0.15	0.40
Variance 2			0.00	0.02	0.35			0.05	0.62

Notes

Start pump @ 160 mL/min at 1530. Sample time 1600.

Grab Samples

RMW-02
VOCs
RMW-02
DRO
RMW-02
GRO

RMW-02
Metals
RMW-02
SVOCs
DUP-01
VOCs
DUP-01
DRO
DUP-01
GRO
DUP-01
Metals
DUP-01
SVOCs

Product Name: Low-Flow System

Date: 2017-05-10 16:03:35

Project Information:		Pump Information:	
Operator Name	Kevin Stephenson	Pump Model/Type	Geotech peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Telegraph GW Sampling	Tubing Diameter	.17 in
Site Name	Macon Telegraph	Tubing Length	30 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	364455		
Turbidity Make/Model	LaMotte 2020	Pump placement from TOC	24.69 ft

Well Information:		Pumping Information:	
Well ID	RMW-03	Final Pumping Rate	120 mL/min
Well diameter	2 in	Total System Volume	0.2239027 L
Well Total Depth	29.69 ft	Calculated Sample Rate	240 sec
Screen Length	15 ft	Stabilization Drawdown	18.84 in
Depth to Water	20.37 ft	Total Volume Pumped	2.88 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	15:42:02	480.85	25.64	5.20	84.57	1.07	21.71	3.95	158.15
Last 5	15:46:02	720.86	25.85	5.21	85.47	0.76	21.74	3.70	160.46
Last 5	15:50:02	960.86	25.85	5.15	85.31	1.71	21.82	3.35	166.91
Last 5	15:54:02	1200.85	25.76	5.16	85.04	1.00	21.87	3.48	162.73
Last 5	15:58:02	1440.85	25.58	5.17	84.90	0.71	21.94	3.34	150.82
Variance 0			0.00	-0.06	-0.15			-0.35	6.45
Variance 1			-0.09	0.01	-0.28			0.12	-4.19
Variance 2			-0.18	0.01	-0.13			-0.14	-11.91

Notes

Pre-purged 4 liters

Grab Samples

RMW-03

Semivolatile

RMW-03

Metals

RMW-03

Organics

RMW-03
Volatile Organics
RMW-03
DRO

Product Name: Low-Flow System

Date: 2017-05-11 08:48:27

Project Information:	
Operator Name	Kevin Stephenson
Company Name	Resolute
Project Name	Telegraph GW Sampling
Site Name	Macon Telegraph
Latitude	0º 0' 0"
Longitude	0º 0' 0"
Sonde SN	364455
Turbidity Make/Model	LaMotte 2020

Pump Information:	
Pump Model/Type	Geotech peristaltic
Tubing Type	LDPE
Tubing Diameter	.17 in
Tubing Length	25 ft
Pump placement from TOC	24 ft

Well Information:	
Well ID	RMW-04
Well diameter	2 in
Well Total Depth	24.22 ft
Screen Length	15 ft
Depth to Water	21.85 ft

Pumping Information:	
Final Pumping Rate	150 mL/min
Total System Volume	0.2015856 L
Calculated Sample Rate	120 sec
Stabilization Drawdown	18.6 in
Total Volume Pumped	1.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	08:36:26	120.03	22.76	5.94	312.80	1.20	23.00	2.95	-45.91
Last 5	08:38:26	240.02	22.92	5.91	298.84	0.83	23.11	2.95	-50.06
Last 5	08:40:26	360.02	23.01	5.90	284.37	0.71	23.20	2.96	-56.15
Last 5	08:42:26	480.02	23.10	5.86	270.72	1.00	23.31	3.00	-57.22
Last 5	08:44:26	600.02	23.20	5.85	273.88	1.30	23.40	2.93	-71.12
Variance 0			0.08	-0.01	-14.47			0.01	-6.09
Variance 1			0.09	-0.04	-13.65			0.04	-1.07
Variance 2			0.10	-0.01	3.16			-0.06	-13.91

Notes

Pre-purged 2 liters.

Grab Samples

RMW-04

Semivolatile

RMW-04

Metals

RMW-04

GRO

RMW-04
VOC
RMW-04
DRO

Product Name: Low-Flow System

Date: 2017-05-11 08:45:39

Project Information:	
Operator Name	Michael Patinkin
Company Name	Resolute
Project Name	Phase II ESA
Site Name	Macon Telegraph
Latitude	0º 0' 0"
Longitude	0º 0' 0"
Sonde SN	440279
Turbidity Make/Model	LaMotte 2020we

Pump Information:	
Pump Model/Type	GeoPump Peristaltic
Tubing Type	LDPE
Tubing Diameter	0.17 in
Tubing Length	35 ft
Pump placement from TOC	21 ft

Well Information:	
Well ID	RMW-05
Well diameter	2 in
Well Total Depth	25.13 ft
Screen Length	10 ft
Depth to Water	17.82 ft

Pumping Information:	
Final Pumping Rate	225 mL/min
Total System Volume	0.2462198 L
Calculated Sample Rate	180 sec
Stabilization Drawdown	6.36 in
Total Volume Pumped	4 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	08:27:38	360.03	22.94	5.07	183.85	17.90	18.10	5.52	136.12
Last 5	08:30:38	540.03	22.71	5.11	185.17	11.40	18.15	5.66	133.04
Last 5	08:33:38	720.03	22.69	5.13	184.88	6.90	18.25	5.71	131.11
Last 5	08:36:38	900.03	22.72	5.11	184.17	4.55	18.30	5.72	130.32
Last 5	08:39:38	1080.03	22.70	5.09	183.68	3.60	18.35	5.71	129.83
Variance 0			-0.03	0.02	-0.29			0.05	-1.93
Variance 1			0.03	-0.03	-0.71			0.01	-0.79
Variance 2			-0.02	-0.02	-0.49			-0.01	-0.49

Notes

Sample time 0850. Triplicate volume collected for MS/MSD pair.

Grab Samples

RMW-05
VOCs
RMW-05
DRO
RMW-05
GRO

RMW-05
Metals
RMW-05
SVOCs

Product Name: Low-Flow System

Date: 2017-05-11 10:05:58

Project Information:		Pump Information:	
Operator Name	Kevin Stephenson	Pump Model/Type	Geotech peristaltic
Company Name	Resolute	Tubing Type	LDPE
Project Name	Telegraph GW Sampling	Tubing Diameter	.17 in
Site Name	Macon Telegraph	Tubing Length	30 ft
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	364455		
Turbidity Make/Model	LaMotte 2020	Pump placement from TOC	23.92 ft

Well Information:		Pumping Information:	
Well ID	RMW-06	Final Pumping Rate	250 mL/min
Well diameter	2 in	Total System Volume	0.2239027 L
Well Total Depth	24.92 ft	Calculated Sample Rate	120 sec
Screen Length	15 ft	Stabilization Drawdown	24.72 in
Depth to Water	15.36 ft	Total Volume Pumped	2.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	09:54:06	120.09	24.04	6.23	260.31	0.96	16.80	6.81	113.22
Last 5	09:56:06	240.02	23.97	6.20	258.43	1.01	17.01	6.89	117.45
Last 5	09:58:06	360.02	23.95	6.20	254.82	0.69	17.13	6.88	123.06
Last 5	10:00:06	480.02	24.02	6.19	251.54	0.68	17.31	6.97	130.45
Last 5	10:02:06	600.02	23.92	6.18	253.01	0.75	17.42	7.11	138.41
Variance 0			-0.02	0.00	-3.61			-0.01	5.61
Variance 1			0.07	-0.01	-3.28			0.09	7.39
Variance 2			-0.10	-0.01	1.46			0.13	7.95

Notes

Pre-purged 2 liters.

Grab Samples

RMW-06

Semivolatile

RMW-06

Metals

RMW-06

GRO

RMW-06
VOC
RMW-06
DRO

Product Name: Low-Flow System

Date: 2017-05-11 12:05:35

Project Information:	
Operator Name	Kevin Stephenson
Company Name	Resolute
Project Name	Telegraph GW Sampling
Site Name	Macon Telegraph
Latitude	0º 0' 0"
Longitude	0º 0' 0"
Sonde SN	364455
Turbidity Make/Model	LaMotte 2020

Pump Information:	
Pump Model/Type	Geotech peristaltic
Tubing Type	LDPE
Tubing Diameter	.17 in
Tubing Length	30 ft
Pump placement from TOC	28.0 ft

Well Information:	
Well ID	RMW-07
Well diameter	2 in
Well Total Depth	28.70 ft
Screen Length	10 ft
Depth to Water	11.53 ft

Pumping Information:	
Final Pumping Rate	240 mL/min
Total System Volume	0.2239027 L
Calculated Sample Rate	120 sec
Stabilization Drawdown	21.6 in
Total Volume Pumped	4.8 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 1000%	+/- 0.1	+/- 5%	+/- 5		+/- 10%	+/- 1000%
Last 5	11:54:25	720.02	25.60	5.14	213.26	6.29	13.25	3.24	72.05
Last 5	11:56:25	840.02	25.56	5.15	213.40	5.38	13.27	3.25	73.29
Last 5	11:58:25	960.02	25.54	5.15	212.51	6.38	13.30	3.22	66.54
Last 5	12:00:25	1080.02	25.65	5.15	212.10	6.80	13.32	3.15	67.58
Last 5	12:02:26	1201.02	25.67	5.16	211.04	4.83	13.33	3.06	62.72
Variance 0			-0.02	-0.00	-0.89			-0.03	-6.75
Variance 1			0.12	-0.00	-0.41			-0.07	1.04
Variance 2			0.02	0.01	-1.06			-0.08	-4.86

Notes

Pre-purged 2 liters.

Grab Samples

RMW-07

Semivolatile

RMW-07

Metals

RMW-07

GRO

RMW-07
VOC
RMW-07
DRO

Product Name: Low-Flow System

Date: 2017-05-11 12:28:34

Project Information:	
Operator Name	Michael Patinkin
Company Name	Resolute
Project Name	Phase II ESA
Site Name	Macon Telegraph
Latitude	0° 0' 0"
Longitude	0° 0' 0"
Sonde SN	440279
Turbidity Make/Model	LaMotte 2020we

Pump Information:	
Pump Model/Type	GeoPump Peristaltic
Tubing Type	LDPE
Tubing Diameter	0.17 in
Tubing Length	40 ft
Pump placement from TOC	22 ft

Well Information:	
Well ID	RMW-09
Well diameter	2 in
Well Total Depth	29.77 ft
Screen Length	15 ft
Depth to Water	8.00 ft

Pumping Information:	
Final Pumping Rate	145 mL/min
Total System Volume	0.2685369 L
Calculated Sample Rate	240 sec
Stabilization Drawdown	72.36 in
Total Volume Pumped	12.5 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW ft	RDO mg/L	ORP mV
Stabilization			+/- 10000	+/- 0.1	+/- 5%	+/- 10000		+/- 0.2	+/- 10000
Last 5	12:05:11	3131.03	27.07	5.89	331.14	9.93	13.48	1.73	110.82
Last 5	12:09:11	3371.03	27.00	5.87	326.70	8.13	13.63	1.93	111.78
Last 5	12:13:11	3610.92	26.99	5.90	333.31	7.63	13.77	1.60	109.95
Last 5	12:17:11	3850.92	26.97	5.89	335.71	8.35	13.90	1.67	109.89
Last 5	12:21:11	4090.92	27.11	5.91	335.11	9.94	14.03	1.59	108.99
Variance 0			-0.01	0.03	6.61			-0.33	-1.83
Variance 1			-0.02	-0.01	2.40			0.07	-0.06
Variance 2			0.14	0.02	-0.60			-0.08	-0.90

Notes

Start pump @ 290 mL/min at 1113. Reduce flow to 180 mL/min at 1125. Reduce flow to 145 mL/min at 1135. Sample time 1225.

Grab Samples

RMW-09
VOCs
RMW-09
DRO
RMW-09
GRO

RMW-09
Metals
RMW-09
SVOCs

APPENDIX F

LABORATORY ANALYTICAL REPORTS

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

May 16, 2017

Michael Patinkin
Resolute Env. & Water Resources Consulting, LLC
1001 Weatherstone Pkwy
Woodstock GA 30188

TEL: (706) 266-0551
FAX: (888) 881-8219

RE: Phase II ESA Macon GA

Dear Michael Patinkin:

Order No: 1705546

Analytical Environmental Services, Inc. received 16 samples on 5/5/2017 10:25:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
State of Georgia, Department of Natural Resources ID #800 for analysis of Drinking Water Metals, effective 07/01/16-06/30/17 and Total Coliforms and E. coli, effective 04/25/17-04/24/20.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and

Ioana Pacurar

Ioana Pacurar
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

1705546 Work Order: PHASE II MACON GA

Date: 05/10/17 Page 1 of 1

COMPANY	ADDRESS
RESOURCE ENVIRONMENTAL & WATER RESOURCE CONSULTING, LLC	1001 WESTSIDE STONE PKWY WOODSTOCK, GA 30188
PHONE 678.398.9942	FAX
SAMPLED BY MICHAEL PARRISH	SIGNATURE

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes)					ANALYSIS REQUESTED	REMARKS	No # of Containers
1	RMW-12	05/1/17	0945	X		SO	4	X	1	X	3			9
2	RMW-13	05/01/17	1500	X		SO	4	X	1	X	3			9
3	RMW-02	05/01/17	1600	X		SO	4	X	1	X	3			9
4	RMW-01	05/01/17	1730	X		SO	4	X	1	X	3			9
5	RMW-01	05/02/17	0915	X		SO	4	X	1	X	3			9
6	RMW-03	05/02/17	1315	X		SO	4	X	1	X	3			9
7	RMW-09	05/02/17	1600	X		SO	4	X	1	X	3			9
8	RMW-08	05/03/17	1740	X		SO	4	X	1	X	3			9
9	RMW-07	05/03/17	1100	X		SO	4	X	1	X	3			9
10	RMW-06	05/03/17	1430	X		SO	4	X	1	X	3			9
11	RMW-05	05/03/17	1715	X		SO	4	X	1	X	3			9
12	RMW-04	05/04/17	1030	X		SO	4	X	1	X	3			9
13	RMW-10 RS3-04	05/04/17	1230	X		SO	4	X	1	X	3			9
14	RMW-11	05/2/17	—	X		SO	4	X	1	X	3			9

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	05/10/17 1700	1:	5/15/17 10:25
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT 05/10/17 VIA
IN / / VIA
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: PHASE II ESA MACON GA
PROJECT #:
SITE ADDRESS: 120 BROADWAY MACON, GA 31201
SEND REPORT TO: MICHAEL.PARRISH@RESOURCEENV.COM
INVOICE TO: (IF DIFFERENT FROM ABOVE)
CINDY.HARRIS@RESOURCEENV.COM
QUOTE #: PO#:

RECEIPT
Total # of Containers: 126

Turnaround Time Request
- ✓ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? Y/N, Fax? Y/N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 16-May-17

Client: Resolute Env. & Water Resources Consulting, LLC
Project: Phase II ESA Macon GA
Lab ID: 1705546

Case Narrative

Sample Receiving Non-conformance:

Two Trip Blanks were provided but not listed on the Chain of Custody. Both Trip blanks were analyzed at no cost to the client.

Volatile Organic Compounds Analysis by Method 8260B:

Percent recovery for the internal standard compound 1,4-Dichlorobenzene-d4 on samples 1705546-010A, & -013 A was outside control limits biased low due to suspected matrix interference. All other internal standard recoveries were within control limits.

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 10:45:00 AM
Lab ID:	1705546-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.121		mg/Kg-dry	242415	1	05/12/2017 17:13	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,4,5-Trichlorophenol	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,4,6-Trichlorophenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,4-Dichlorophenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,4-Dimethylphenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,4-Dinitrophenol	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,4-Dinitrotoluene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2,6-Dinitrotoluene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2-Chloronaphthalene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2-Chlorophenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2-Methylnaphthalene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2-Methylphenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2-Nitroaniline	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
2-Nitrophenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
3,3´-Dichlorobenzidine	BRL	870		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
3-Nitroaniline	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4,6-Dinitro-2-methylphenol	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Bromophenyl phenyl ether	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Chloro-3-methylphenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Chloroaniline	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Chlorophenyl phenyl ether	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Methylphenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Nitroaniline	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
4-Nitrophenol	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Acenaphthene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Acenaphthylene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Acetophenone	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Anthracene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Atrazine	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Benz(a)anthracene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Benzaldehyde	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Benzo(a)pyrene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Benzo(b)fluoranthene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Benzo(g,h,i)perylene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Benzo(k)fluoranthene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Bis(2-chloroethoxy)methane	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Bis(2-chloroethyl)ether	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Bis(2-chloroisopropyl)ether	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 10:45:00 AM
Lab ID:	1705546-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Butyl benzyl phthalate	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Caprolactam	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Carbazole	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Chrysene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Di-n-butyl phthalate	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Di-n-octyl phthalate	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Dibenz(a,h)anthracene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Dibenzofuran	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Diethyl phthalate	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Dimethyl phthalate	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Fluoranthene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Fluorene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Hexachlorobenzene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Hexachlorobutadiene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Hexachlorocyclopentadiene	BRL	860		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Hexachloroethane	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Indeno(1,2,3-cd)pyrene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Isophorone	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
N-Nitrosodi-n-propylamine	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
N-Nitrosodiphenylamine	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Naphthalene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Nitrobenzene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Pentachlorophenol	BRL	2200		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Phenanthrene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Phenol	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Pyrene	BRL	430		ug/Kg-dry	242259	1	05/09/2017 14:35	YH
Surr: 2,4,6-Tribromophenol	90 9	46 9-137		%REC	242259	1	05/09/2017 14:35	YH
Surr: 2-Fluorobiphenyl	71 2	50-115		%REC	242259	1	05/09/2017 14:35	YH
Surr: 2-Fluorophenol	62 1	41 2-105		%REC	242259	1	05/09/2017 14:35	YH
Surr: 4-Terphenyl-d14	80 3	51 9-126		%REC	242259	1	05/09/2017 14:35	YH
Surr: Nitrobenzene-d5	56	40 2-113		%REC	242259	1	05/09/2017 14:35	YH
Surr: Phenol-d5	60 5	45-109		%REC	242259	1	05/09/2017 14:35	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3 9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,1,2,2-Tetrachloroethane	BRL	3 9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,1,2-Trichloroethane	BRL	3 9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,1-Dichloroethane	BRL	3 9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,1-Dichloroethene	BRL	3 9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,2,4-Trichlorobenzene	BRL	3 9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH

Qualifiers:

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- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 10:45:00 AM
Lab ID:	1705546-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,2-Dibromoethane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,2-Dichlorobenzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,2-Dichloroethane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,2-Dichloropropane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,3-Dichlorobenzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
1,4-Dichlorobenzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
2-Butanone	BRL	39		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
2-Hexanone	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
4-Methyl-2-pentanone	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Acetone	BRL	77		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Benzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Bromodichloromethane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Bromoform	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Bromomethane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Carbon disulfide	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Carbon tetrachloride	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Chlorobenzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Chloroethane	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Chloroform	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Chloromethane	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
cis-1,2-Dichloroethene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
cis-1,3-Dichloropropene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Cyclohexane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Dibromochloromethane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Dichlorodifluoromethane	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Ethylbenzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Freon-113	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Isopropylbenzene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
m,p-Xylene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Methyl acetate	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Methyl tert-butyl ether	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Methylcyclohexane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Methylene chloride	BRL	15		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
o-Xylene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Styrene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Tetrachloroethene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Toluene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
trans-1,2-Dichloroethene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
trans-1,3-Dichloropropene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Trichloroethene	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH

Qualifiers:

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- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 10:45:00 AM
Lab ID:	1705546-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				(SW5035)				
Trichlorofluoromethane	BRL	3.9		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Vinyl chloride	BRL	7.7		ug/Kg-dry	242311	1	05/08/2017 17:06	KH
Surr: 4-Bromofluorobenzene	78.1	63-125		%REC	242311	1	05/08/2017 17:06	KH
Surr: Dibromofluoromethane	84.3	69.9-123		%REC	242311	1	05/08/2017 17:06	KH
Surr: Toluene-d8	91.4	70-122		%REC	242311	1	05/08/2017 17:06	KH
GASOLINE RANGE ORGANICS SW8015C				(SW5035)				
TPH (Gasoline Range Organics)	BRL	0.38		mg/Kg-dry	242623	1	05/14/2017 14:56	JE
Surr: a,a,a-trifluorotoluene	118	70.1-136		%REC	242623	1	05/14/2017 14:56	JE
DIESEL RANGE ORGANICS SW8015C				(SW3550C)				
TPH (Diesel Range Organics)	BRL	8.7		mg/Kg-dry	242299	1	05/10/2017 17:44	RF
Surr: Dioctylphthalate	73.4	54.5-121		%REC	242299	1	05/10/2017 17:44	RF
METALS, TOTAL SW6010D				(SW3050B)				
Arsenic	BRL	5.23		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
Barium	86.9	5.23		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
Cadmium	BRL	2.61		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
Chromium	3.05	2.61		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
Lead	BRL	5.23		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
Selenium	BRL	5.23		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
Silver	BRL	2.61		mg/Kg-dry	242449	1	05/11/2017 16:47	IO
PERCENT MOISTURE D2216								
Percent Moisture	23.0	0		wt%	R342850	1	05/11/2017 07:00	BD

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 3:00:00 PM
Lab ID:	1705546-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.104		mg/Kg-dry	242415	1	05/12/2017 17:15	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,4,5-Trichlorophenol	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,4,6-Trichlorophenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,4-Dichlorophenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,4-Dimethylphenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,4-Dinitrophenol	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,4-Dinitrotoluene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2,6-Dinitrotoluene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2-Chloronaphthalene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2-Chlorophenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2-Methylnaphthalene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2-Methylphenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2-Nitroaniline	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
2-Nitrophenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
3,3´-Dichlorobenzidine	BRL	820		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
3-Nitroaniline	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4,6-Dinitro-2-methylphenol	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Bromophenyl phenyl ether	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Chloro-3-methylphenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Chloroaniline	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Chlorophenyl phenyl ether	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Methylphenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Nitroaniline	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
4-Nitrophenol	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Acenaphthene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Acenaphthylene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Acetophenone	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Anthracene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Atrazine	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Benz(a)anthracene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Benzaldehyde	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Benzo(a)pyrene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Benzo(b)fluoranthene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Benzo(g,h,i)perylene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Benzo(k)fluoranthene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Bis(2-chloroethoxy)methane	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Bis(2-chloroethyl)ether	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Bis(2-chloroisopropyl)ether	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH

Qualifiers:

- * Value exceeds maximum contaminant level
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- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 3:00:00 PM
Lab ID:	1705546-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Butyl benzyl phthalate	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Caprolactam	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Carbazole	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Chrysene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Di-n-butyl phthalate	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Di-n-octyl phthalate	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Dibenz(a,h)anthracene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Dibenzofuran	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Diethyl phthalate	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Dimethyl phthalate	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Fluoranthene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Fluorene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Hexachlorobenzene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Hexachlorobutadiene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Hexachlorocyclopentadiene	BRL	810		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Hexachloroethane	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Indeno(1,2,3-cd)pyrene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Isophorone	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
N-Nitrosodi-n-propylamine	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
N-Nitrosodiphenylamine	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Naphthalene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Nitrobenzene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Pentachlorophenol	BRL	2100		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Phenanthrene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Phenol	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Pyrene	BRL	400		ug/Kg-dry	242259	1	05/09/2017 15:02	YH
Surr: 2,4,6-Tribromophenol	99.4	46.9-137		%REC	242259	1	05/09/2017 15:02	YH
Surr: 2-Fluorobiphenyl	75.8	50-115		%REC	242259	1	05/09/2017 15:02	YH
Surr: 2-Fluorophenol	66	41.2-105		%REC	242259	1	05/09/2017 15:02	YH
Surr: 4-Terphenyl-d14	87.1	51.9-126		%REC	242259	1	05/09/2017 15:02	YH
Surr: Nitrobenzene-d5	58.8	40.2-113		%REC	242259	1	05/09/2017 15:02	YH
Surr: Phenol-d5	66.3	45-109		%REC	242259	1	05/09/2017 15:02	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,1,2,2-Tetrachloroethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,1,2-Trichloroethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,1-Dichloroethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,1-Dichloroethene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,2,4-Trichlorobenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH

Qualifiers:

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- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
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- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 3:00:00 PM
Lab ID:	1705546-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,2-Dibromoethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,2-Dichlorobenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,2-Dichloroethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,2-Dichloropropane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,3-Dichlorobenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
1,4-Dichlorobenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
2-Butanone	BRL	38		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
2-Hexanone	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
4-Methyl-2-pentanone	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Acetone	BRL	75		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Benzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Bromodichloromethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Bromoform	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Bromomethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Carbon disulfide	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Carbon tetrachloride	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Chlorobenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Chloroethane	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Chloroform	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Chloromethane	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
cis-1,2-Dichloroethene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
cis-1,3-Dichloropropene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Cyclohexane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Dibromochloromethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Dichlorodifluoromethane	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Ethylbenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Freon-113	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Isopropylbenzene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
m,p-Xylene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Methyl acetate	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Methyl tert-butyl ether	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Methylcyclohexane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Methylene chloride	BRL	15		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
o-Xylene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Styrene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Tetrachloroethene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Toluene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
trans-1,2-Dichloroethene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
trans-1,3-Dichloropropene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Trichloroethene	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
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- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 3:00:00 PM
Lab ID:	1705546-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				(SW5035)				
Trichlorofluoromethane	BRL	3.8		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Vinyl chloride	BRL	7.5		ug/Kg-dry	242311	1	05/08/2017 17:30	KH
Surr: 4-Bromofluorobenzene	79.2	63-125		%REC	242311	1	05/08/2017 17:30	KH
Surr: Dibromofluoromethane	84.6	69.9-123		%REC	242311	1	05/08/2017 17:30	KH
Surr: Toluene-d8	90.2	70-122		%REC	242311	1	05/08/2017 17:30	KH
GASOLINE RANGE ORGANICS SW8015C				(SW5035)				
TPH (Gasoline Range Organics)	BRL	0.38		mg/Kg-dry	242623	1	05/14/2017 15:23	JE
Surr: a,a,a-trifluorotoluene	119	70.1-136		%REC	242623	1	05/14/2017 15:23	JE
DIESEL RANGE ORGANICS SW8015C				(SW3550C)				
TPH (Diesel Range Organics)	19	8.2		mg/Kg-dry	242299	1	05/11/2017 08:53	RF
Surr: Dioctylphthalate	100	54.5-121		%REC	242299	1	05/11/2017 08:53	RF
METALS, TOTAL SW6010D				(SW3050B)				
Arsenic	BRL	4.89		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
Barium	54.0	4.89		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
Cadmium	BRL	2.44		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
Chromium	9.01	2.44		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
Lead	14.7	4.89		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
Selenium	BRL	4.89		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
Silver	BRL	2.44		mg/Kg-dry	242449	1	05/11/2017 18:52	IO
PERCENT MOISTURE D2216								
Percent Moisture	18.2	0		wt%	R342850	1	05/11/2017 07:00	BD

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 4:00:00 PM
Lab ID:	1705546-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.133		mg/Kg-dry	242415	1	05/12/2017 17:18	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,4,5-Trichlorophenol	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,4,6-Trichlorophenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,4-Dichlorophenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,4-Dimethylphenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,4-Dinitrophenol	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,4-Dinitrotoluene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2,6-Dinitrotoluene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2-Chloronaphthalene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2-Chlorophenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2-Methylnaphthalene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2-Methylphenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2-Nitroaniline	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
2-Nitrophenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
3,3´-Dichlorobenzidine	BRL	910		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
3-Nitroaniline	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4,6-Dinitro-2-methylphenol	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Bromophenyl phenyl ether	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Chloro-3-methylphenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Chloroaniline	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Chlorophenyl phenyl ether	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Methylphenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Nitroaniline	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
4-Nitrophenol	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Acenaphthene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Acenaphthylene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Acetophenone	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Anthracene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Atrazine	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Benz(a)anthracene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Benzaldehyde	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Benzo(a)pyrene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Benzo(b)fluoranthene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Benzo(g,h,i)perylene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Benzo(k)fluoranthene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Bis(2-chloroethoxy)methane	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Bis(2-chloroethyl)ether	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Bis(2-chloroisopropyl)ether	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH

Qualifiers:

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Analytical Environmental Services, Inc

Date: 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 4:00:00 PM
Lab ID:	1705546-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				(SW3550C)				
Bis(2-ethylhexyl)phthalate	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Butyl benzyl phthalate	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Caprolactam	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Carbazole	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Chrysene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Di-n-butyl phthalate	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Di-n-octyl phthalate	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Dibenz(a,h)anthracene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Dibenzofuran	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Diethyl phthalate	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Dimethyl phthalate	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Fluoranthene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Fluorene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Hexachlorobenzene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Hexachlorobutadiene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Hexachlorocyclopentadiene	BRL	890		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Hexachloroethane	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Indeno(1,2,3-cd)pyrene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Isophorone	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
N-Nitrosodi-n-propylamine	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
N-Nitrosodiphenylamine	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Naphthalene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Nitrobenzene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Pentachlorophenol	BRL	2300		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Phenanthrene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Phenol	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Pyrene	BRL	450		ug/Kg-dry	242259	1	05/09/2017 15:28	YH
Surr: 2,4,6-Tribromophenol	86.8	46.9-137		%REC	242259	1	05/09/2017 15:28	YH
Surr: 2-Fluorobiphenyl	65.8	50-115		%REC	242259	1	05/09/2017 15:28	YH
Surr: 2-Fluorophenol	55	41.2-105		%REC	242259	1	05/09/2017 15:28	YH
Surr: 4-Terphenyl-d14	78.6	51.9-126		%REC	242259	1	05/09/2017 15:28	YH
Surr: Nitrobenzene-d5	51.6	40.2-113		%REC	242259	1	05/09/2017 15:28	YH
Surr: Phenol-d5	55.3	45-109		%REC	242259	1	05/09/2017 15:28	YH
TCL VOLATILE ORGANICS SW8260B				(SW5035)				
1,1,1-Trichloroethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,1,2,2-Tetrachloroethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,1,2-Trichloroethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,1-Dichloroethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,1-Dichloroethene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,2,4-Trichlorobenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 4:00:00 PM
Lab ID:	1705546-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,2-Dibromoethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,2-Dichlorobenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,2-Dichloroethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,2-Dichloropropane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,3-Dichlorobenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
1,4-Dichlorobenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
2-Butanone	BRL	46		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
2-Hexanone	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
4-Methyl-2-pentanone	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Acetone	BRL	91		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Benzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Bromodichloromethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Bromoform	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Bromomethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Carbon disulfide	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Carbon tetrachloride	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Chlorobenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Chloroethane	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Chloroform	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Chloromethane	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
cis-1,2-Dichloroethene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
cis-1,3-Dichloropropene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Cyclohexane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Dibromochloromethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Dichlorodifluoromethane	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Ethylbenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Freon-113	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Isopropylbenzene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
m,p-Xylene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Methyl acetate	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Methyl tert-butyl ether	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Methylcyclohexane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Methylene chloride	BRL	18		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
o-Xylene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Styrene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Tetrachloroethene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Toluene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
trans-1,2-Dichloroethene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
trans-1,3-Dichloropropene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Trichloroethene	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-02
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 4:00:00 PM
Lab ID:	1705546-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
Trichlorofluoromethane	BRL	4.6		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Vinyl chloride	BRL	9.1		ug/Kg-dry	242311	1	05/08/2017 17:53	KH
Surr: 4-Bromofluorobenzene	83.6	63-125		%REC	242311	1	05/08/2017 17:53	KH
Surr: Dibromofluoromethane	82.6	69.9-123		%REC	242311	1	05/08/2017 17:53	KH
Surr: Toluene-d8	89.9	70-122		%REC	242311	1	05/08/2017 17:53	KH
GASOLINE RANGE ORGANICS SW8015C				**(SW5035)**				
TPH (Gasoline Range Organics)	BRL	0.51		mg/Kg-dry	242623	1	05/14/2017 15:50	JE
Surr: a,a,a-trifluorotoluene	114	70.1-136		%REC	242623	1	05/14/2017 15:50	JE
DIESEL RANGE ORGANICS SW8015C				**(SW3550C)**				
TPH (Diesel Range Organics)	BRL	9.1		mg/Kg-dry	242299	1	05/10/2017 18:08	RF
Surr: Dioctylphthalate	86.1	54.5-121		%REC	242299	1	05/10/2017 18:08	RF
METALS, TOTAL SW6010D				**(SW3050B)**				
Arsenic	BRL	4.93		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
Barium	420	4.93		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
Cadmium	BRL	2.46		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
Chromium	21.7	2.46		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
Lead	5.46	4.93		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
Selenium	BRL	4.93		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
Silver	BRL	2.46		mg/Kg-dry	242449	1	05/11/2017 18:56	IO
PERCENT MOISTURE D2216								
Percent Moisture	26.2	0		wt%	R342850	1	05/11/2017 07:00	BD

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 5:30:00 PM
Lab ID:	1705546-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.112		mg/Kg-dry	242415	1	05/12/2017 17:20	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,4,5-Trichlorophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,4,6-Trichlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,4-Dichlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,4-Dimethylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,4-Dinitrophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,4-Dinitrotoluene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2,6-Dinitrotoluene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2-Chloronaphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2-Chlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2-Methylnaphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2-Methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
2-Nitrophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
3,3´-Dichlorobenzidine	BRL	830		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
3-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4,6-Dinitro-2-methylphenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Bromophenyl phenyl ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Chloro-3-methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Chloroaniline	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Chlorophenyl phenyl ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
4-Nitrophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Acenaphthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Acenaphthylene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Acetophenone	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Atrazine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Benz(a)anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Benzaldehyde	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Benzo(a)pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Benzo(b)fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Benzo(g,h,i)perylene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Benzo(k)fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Bis(2-chloroethoxy)methane	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Bis(2-chloroethyl)ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Bis(2-chloroisopropyl)ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH

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Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 5:30:00 PM
Lab ID:	1705546-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Butyl benzyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Caprolactam	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Carbazole	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Chrysene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Di-n-butyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Di-n-octyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Dibenz(a,h)anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Dibenzofuran	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Diethyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Dimethyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Fluorene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Hexachlorobenzene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Hexachlorobutadiene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Hexachlorocyclopentadiene	BRL	820		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Hexachloroethane	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Indeno(1,2,3-cd)pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Isophorone	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
N-Nitrosodi-n-propylamine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
N-Nitrosodiphenylamine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Naphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Nitrobenzene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Pentachlorophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Phenanthrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Phenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 16:34	YH
Surr: 2,4,6-Tribromophenol	104	46.9-137		%REC	242340	1	05/10/2017 16:34	YH
Surr: 2-Fluorobiphenyl	83.6	50-115		%REC	242340	1	05/10/2017 16:34	YH
Surr: 2-Fluorophenol	71.9	41.2-105		%REC	242340	1	05/10/2017 16:34	YH
Surr: 4-Terphenyl-d14	95.2	51.9-126		%REC	242340	1	05/10/2017 16:34	YH
Surr: Nitrobenzene-d5	64.4	40.2-113		%REC	242340	1	05/10/2017 16:34	YH
Surr: Phenol-d5	71.5	45-109		%REC	242340	1	05/10/2017 16:34	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,1,2,2-Tetrachloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,1,2-Trichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,1-Dichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,1-Dichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,2,4-Trichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH

Qualifiers:

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- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 5:30:00 PM
Lab ID:	1705546-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,2-Dibromoethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,2-Dichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,2-Dichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,2-Dichloropropane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,3-Dichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
1,4-Dichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
2-Butanone	BRL	35		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
2-Hexanone	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
4-Methyl-2-pentanone	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Acetone	BRL	71		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Benzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Bromodichloromethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Bromoform	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Bromomethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Carbon disulfide	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Carbon tetrachloride	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Chlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Chloroethane	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Chloroform	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Chloromethane	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
cis-1,2-Dichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
cis-1,3-Dichloropropene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Cyclohexane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Dibromochloromethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Dichlorodifluoromethane	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Ethylbenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Freon-113	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Isopropylbenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
m,p-Xylene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Methyl acetate	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Methyl tert-butyl ether	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Methylcyclohexane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Methylene chloride	BRL	14		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
o-Xylene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Styrene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Tetrachloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Toluene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
trans-1,2-Dichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
trans-1,3-Dichloropropene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Trichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH

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- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RSB-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/1/2017 5:30:00 PM
Lab ID:	1705546-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
Trichlorofluoromethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Vinyl chloride	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 18:17	KH
Surr: 4-Bromofluorobenzene	78.8	63-125		%REC	242311	1	05/08/2017 18:17	KH
Surr: Dibromofluoromethane	87.7	69.9-123		%REC	242311	1	05/08/2017 18:17	KH
Surr: Toluene-d8	91.4	70-122		%REC	242311	1	05/08/2017 18:17	KH
GASOLINE RANGE ORGANICS SW8015C				**(SW5035)**				
TPH (Gasoline Range Organics)	BRL	0.37		mg/Kg-dry	242623	1	05/14/2017 16:16	JE
Surr: a,a,a-trifluorotoluene	116	70.1-136		%REC	242623	1	05/14/2017 16:16	JE
DIESEL RANGE ORGANICS SW8015C				**(SW3550C)**				
TPH (Diesel Range Organics)	19	8.3		mg/Kg-dry	242299	1	05/11/2017 02:18	RF
Surr: Dioctylphthalate	98.8	54.5-121		%REC	242299	1	05/11/2017 02:18	RF
METALS, TOTAL SW6010D				**(SW3050B)**				
Arsenic	BRL	4.45		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
Barium	40.0	4.45		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
Cadmium	BRL	2.23		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
Chromium	12.9	2.23		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
Lead	23.2	4.45		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
Selenium	BRL	4.45		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
Silver	BRL	2.23		mg/Kg-dry	242449	1	05/11/2017 19:00	IO
PERCENT MOISTURE D2216								
Percent Moisture	19.2	0		wt%	R342850	1	05/11/2017 07:00	BD

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 9:15:00 AM
Lab ID:	1705546-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.120		mg/Kg-dry	242415	1	05/12/2017 17:23	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,4,5-Trichlorophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,4,6-Trichlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,4-Dichlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,4-Dimethylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,4-Dinitrophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,4-Dinitrotoluene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2,6-Dinitrotoluene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2-Chloronaphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2-Chlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2-Methylnaphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2-Methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
2-Nitrophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
3,3´-Dichlorobenzidine	BRL	840		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
3-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4,6-Dinitro-2-methylphenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Bromophenyl phenyl ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Chloro-3-methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Chloroaniline	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Chlorophenyl phenyl ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
4-Nitrophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Acenaphthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Acenaphthylene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Acetophenone	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Atrazine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Benz(a)anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Benzaldehyde	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Benzo(a)pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Benzo(b)fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Benzo(g,h,i)perylene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Benzo(k)fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Bis(2-chloroethoxy)methane	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Bis(2-chloroethyl)ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Bis(2-chloroisopropyl)ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 9:15:00 AM
Lab ID:	1705546-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Butyl benzyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Caprolactam	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Carbazole	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Chrysene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Di-n-butyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Di-n-octyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Dibenz(a,h)anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Dibenzofuran	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Diethyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Dimethyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Fluorene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Hexachlorobenzene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Hexachlorobutadiene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Hexachlorocyclopentadiene	BRL	830		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Hexachloroethane	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Indeno(1,2,3-cd)pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Isophorone	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
N-Nitrosodi-n-propylamine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
N-Nitrosodiphenylamine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Naphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Nitrobenzene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Pentachlorophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Phenanthrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Phenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:00	YH
Surr: 2,4,6-Tribromophenol	109	46.9-137		%REC	242340	1	05/10/2017 17:00	YH
Surr: 2-Fluorobiphenyl	87.2	50-115		%REC	242340	1	05/10/2017 17:00	YH
Surr: 2-Fluorophenol	77.3	41.2-105		%REC	242340	1	05/10/2017 17:00	YH
Surr: 4-Terphenyl-d14	97.1	51.9-126		%REC	242340	1	05/10/2017 17:00	YH
Surr: Nitrobenzene-d5	68.2	40.2-113		%REC	242340	1	05/10/2017 17:00	YH
Surr: Phenol-d5	75.5	45-109		%REC	242340	1	05/10/2017 17:00	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,1,2,2-Tetrachloroethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,1,2-Trichloroethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,1-Dichloroethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,1-Dichloroethene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,2,4-Trichlorobenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH

Qualifiers:

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- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 9:15:00 AM
Lab ID:	1705546-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,2-Dibromoethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,2-Dichlorobenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,2-Dichloroethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,2-Dichloropropane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,3-Dichlorobenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
1,4-Dichlorobenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
2-Butanone	BRL	34		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
2-Hexanone	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
4-Methyl-2-pentanone	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Acetone	BRL	68		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Benzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Bromodichloromethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Bromoform	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Bromomethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Carbon disulfide	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Carbon tetrachloride	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Chlorobenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Chloroethane	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Chloroform	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Chloromethane	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
cis-1,2-Dichloroethene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
cis-1,3-Dichloropropene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Cyclohexane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Dibromochloromethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Dichlorodifluoromethane	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Ethylbenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Freon-113	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Isopropylbenzene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
m,p-Xylene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Methyl acetate	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Methyl tert-butyl ether	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Methylcyclohexane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Methylene chloride	BRL	14		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
o-Xylene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Styrene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Tetrachloroethene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Toluene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
trans-1,2-Dichloroethene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
trans-1,3-Dichloropropene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Trichloroethene	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-01
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 9:15:00 AM
Lab ID:	1705546-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
Trichlorofluoromethane	BRL	3.4		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Vinyl chloride	BRL	6.8		ug/Kg-dry	242311	1	05/08/2017 19:28	KH
Surr: 4-Bromofluorobenzene	85.1	63-125		%REC	242311	1	05/08/2017 19:28	KH
Surr: Dibromofluoromethane	73.7	69.9-123		%REC	242311	1	05/08/2017 19:28	KH
Surr: Toluene-d8	91.3	70-122		%REC	242311	1	05/08/2017 19:28	KH
GASOLINE RANGE ORGANICS SW8015C				**(SW5035)**				
TPH (Gasoline Range Organics)	BRL	0.38		mg/Kg-dry	242623	1	05/14/2017 16:45	JE
Surr: a,a,a-trifluorotoluene	115	70.1-136		%REC	242623	1	05/14/2017 16:45	JE
DIESEL RANGE ORGANICS SW8015C				**(SW3550C)**				
TPH (Diesel Range Organics)	BRL	8.4		mg/Kg-dry	242299	1	05/10/2017 18:31	RF
Surr: Dioctylphthalate	91.5	54.5-121		%REC	242299	1	05/10/2017 18:31	RF
METALS, TOTAL SW6010D				**(SW3050B)**				
Arsenic	BRL	4.67		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
Barium	122	4.67		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
Cadmium	BRL	2.34		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
Chromium	5.98	2.34		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
Lead	5.99	4.67		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
Selenium	BRL	4.67		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
Silver	BRL	2.34		mg/Kg-dry	242449	1	05/11/2017 19:04	IO
PERCENT MOISTURE D2216								
Percent Moisture	20.4	0		wt%	R342850	1	05/11/2017 07:00	BD

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 1:15:00 PM
Lab ID:	1705546-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.110		mg/Kg-dry	242415	1	05/12/2017 17:25	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,4,5-Trichlorophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,4,6-Trichlorophenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,4-Dichlorophenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,4-Dimethylphenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,4-Dinitrophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,4-Dinitrotoluene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2,6-Dinitrotoluene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2-Chloronaphthalene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2-Chlorophenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2-Methylnaphthalene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2-Methylphenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2-Nitroaniline	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
2-Nitrophenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
3,3´-Dichlorobenzidine	BRL	800		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
3-Nitroaniline	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4,6-Dinitro-2-methylphenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Bromophenyl phenyl ether	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Chloro-3-methylphenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Chloroaniline	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Chlorophenyl phenyl ether	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Methylphenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Nitroaniline	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
4-Nitrophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Acenaphthene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Acenaphthylene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Acetophenone	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Anthracene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Atrazine	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Benz(a)anthracene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Benzaldehyde	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Benzo(a)pyrene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Benzo(b)fluoranthene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Benzo(g,h,i)perylene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Benzo(k)fluoranthene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Bis(2-chloroethoxy)methane	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Bis(2-chloroethyl)ether	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Bis(2-chloroisopropyl)ether	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 1:15:00 PM
Lab ID:	1705546-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Butyl benzyl phthalate	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Caprolactam	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Carbazole	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Chrysene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Di-n-butyl phthalate	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Di-n-octyl phthalate	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Dibenz(a,h)anthracene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Dibenzofuran	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Diethyl phthalate	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Dimethyl phthalate	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Fluoranthene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Fluorene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Hexachlorobenzene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Hexachlorobutadiene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Hexachlorocyclopentadiene	BRL	780		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Hexachloroethane	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Indeno(1,2,3-cd)pyrene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Isophorone	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
N-Nitrosodi-n-propylamine	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
N-Nitrosodiphenylamine	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Naphthalene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Nitrobenzene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Pentachlorophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Phenanthrene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Phenol	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Pyrene	BRL	390		ug/Kg-dry	242340	1	05/10/2017 17:26	YH
Surr: 2,4,6-Tribromophenol	102	46.9-137		%REC	242340	1	05/10/2017 17:26	YH
Surr: 2-Fluorobiphenyl	83.9	50-115		%REC	242340	1	05/10/2017 17:26	YH
Surr: 2-Fluorophenol	72.6	41.2-105		%REC	242340	1	05/10/2017 17:26	YH
Surr: 4-Terphenyl-d14	94	51.9-126		%REC	242340	1	05/10/2017 17:26	YH
Surr: Nitrobenzene-d5	67.8	40.2-113		%REC	242340	1	05/10/2017 17:26	YH
Surr: Phenol-d5	71	45-109		%REC	242340	1	05/10/2017 17:26	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,1,2,2-Tetrachloroethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,1,2-Trichloroethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,1-Dichloroethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,1-Dichloroethene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,2,4-Trichlorobenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH

Qualifiers:

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 1:15:00 PM
Lab ID:	1705546-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				(SW5035)				
1,2-Dibromo-3-chloropropane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,2-Dibromoethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,2-Dichlorobenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,2-Dichloroethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,2-Dichloropropane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,3-Dichlorobenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
1,4-Dichlorobenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
2-Butanone	BRL	32		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
2-Hexanone	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
4-Methyl-2-pentanone	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Acetone	BRL	64		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Benzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Bromodichloromethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Bromoform	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Bromomethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Carbon disulfide	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Carbon tetrachloride	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Chlorobenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Chloroethane	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Chloroform	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Chloromethane	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
cis-1,2-Dichloroethene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
cis-1,3-Dichloropropene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Cyclohexane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Dibromochloromethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Dichlorodifluoromethane	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Ethylbenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Freon-113	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Isopropylbenzene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
m,p-Xylene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Methyl acetate	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Methyl tert-butyl ether	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Methylcyclohexane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Methylene chloride	BRL	13		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
o-Xylene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Styrene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Tetrachloroethene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Toluene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
trans-1,2-Dichloroethene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
trans-1,3-Dichloropropene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Trichloroethene	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-03
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 1:15:00 PM
Lab ID:	1705546-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				(SW5035)				
Trichlorofluoromethane	BRL	3.2		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Vinyl chloride	BRL	6.4		ug/Kg-dry	242311	1	05/08/2017 19:52	KH
Surr: 4-Bromofluorobenzene	80.8	63-125		%REC	242311	1	05/08/2017 19:52	KH
Surr: Dibromofluoromethane	82.9	69.9-123		%REC	242311	1	05/08/2017 19:52	KH
Surr: Toluene-d8	91.7	70-122		%REC	242311	1	05/08/2017 19:52	KH
GASOLINE RANGE ORGANICS SW8015C				(SW5035)				
TPH (Gasoline Range Organics)	BRL	0.33		mg/Kg-dry	242623	1	05/14/2017 17:12	JE
Surr: a,a,a-trifluorotoluene	115	70.1-136		%REC	242623	1	05/14/2017 17:12	JE
DIESEL RANGE ORGANICS SW8015C				(SW3550C)				
TPH (Diesel Range Organics)	BRL	8.0		mg/Kg-dry	242339	1	05/10/2017 18:55	RF
Surr: Dioctylphthalate	89.6	54.5-121		%REC	242339	1	05/10/2017 18:55	RF
METALS, TOTAL SW6010D				(SW3050B)				
Arsenic	BRL	4.30		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
Barium	11.2	4.30		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
Cadmium	BRL	2.15		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
Chromium	23.0	2.15		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
Lead	4.62	4.30		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
Selenium	BRL	4.30		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
Silver	BRL	2.15		mg/Kg-dry	242449	1	05/11/2017 19:08	IO
PERCENT MOISTURE D2216								
Percent Moisture	15.8	0		wt%	R342850	1	05/11/2017 07:00	BD

Qualifiers:

- `*` Value exceeds maximum contaminant level
- BRL Below reporting limit
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- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-09
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 4:00:00 PM
Lab ID:	1705546-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.106		mg/Kg-dry	242415	1	05/12/2017 17:28	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,4,5-Trichlorophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,4,6-Trichlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,4-Dichlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,4-Dimethylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,4-Dinitrophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,4-Dinitrotoluene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2,6-Dinitrotoluene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2-Chloronaphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2-Chlorophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2-Methylnaphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2-Methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
2-Nitrophenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
3,3´-Dichlorobenzidine	BRL	830		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
3-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4,6-Dinitro-2-methylphenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Bromophenyl phenyl ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Chloro-3-methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Chloroaniline	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Chlorophenyl phenyl ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Methylphenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Nitroaniline	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
4-Nitrophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Acenaphthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Acenaphthylene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Acetophenone	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Atrazine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Benz(a)anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Benzaldehyde	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Benzo(a)pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Benzo(b)fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Benzo(g,h,i)perylene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Benzo(k)fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Bis(2-chloroethoxy)methane	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Bis(2-chloroethyl)ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Bis(2-chloroisopropyl)ether	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-09
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 4:00:00 PM
Lab ID:	1705546-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Butyl benzyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Caprolactam	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Carbazole	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Chrysene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Di-n-butyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Di-n-octyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Dibenz(a,h)anthracene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Dibenzofuran	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Diethyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Dimethyl phthalate	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Fluoranthene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Fluorene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Hexachlorobenzene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Hexachlorobutadiene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Hexachlorocyclopentadiene	BRL	820		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Hexachloroethane	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Indeno(1,2,3-cd)pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Isophorone	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
N-Nitrosodi-n-propylamine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
N-Nitrosodiphenylamine	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Naphthalene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Nitrobenzene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Pentachlorophenol	BRL	2100		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Phenanthrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Phenol	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Pyrene	BRL	410		ug/Kg-dry	242340	1	05/10/2017 17:55	YH
Surr: 2,4,6-Tribromophenol	102	46.9-137		%REC	242340	1	05/10/2017 17:55	YH
Surr: 2-Fluorobiphenyl	82.2	50-115		%REC	242340	1	05/10/2017 17:55	YH
Surr: 2-Fluorophenol	73.2	41.2-105		%REC	242340	1	05/10/2017 17:55	YH
Surr: 4-Terphenyl-d14	94.1	51.9-126		%REC	242340	1	05/10/2017 17:55	YH
Surr: Nitrobenzene-d5	66.3	40.2-113		%REC	242340	1	05/10/2017 17:55	YH
Surr: Phenol-d5	71.1	45-109		%REC	242340	1	05/10/2017 17:55	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,1,2,2-Tetrachloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,1,2-Trichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,1-Dichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,1-Dichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,2,4-Trichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH

Qualifiers:

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-09
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 4:00:00 PM
Lab ID:	1705546-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,2-Dibromoethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,2-Dichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,2-Dichloroethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,2-Dichloropropane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,3-Dichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
1,4-Dichlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
2-Butanone	BRL	35		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
2-Hexanone	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
4-Methyl-2-pentanone	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Acetone	BRL	71		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Benzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Bromodichloromethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Bromoform	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Bromomethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Carbon disulfide	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Carbon tetrachloride	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Chlorobenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Chloroethane	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Chloroform	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Chloromethane	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
cis-1,2-Dichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
cis-1,3-Dichloropropene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Cyclohexane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Dibromochloromethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Dichlorodifluoromethane	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Ethylbenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Freon-113	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Isopropylbenzene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
m,p-Xylene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Methyl acetate	45	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Methyl tert-butyl ether	44	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Methylcyclohexane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Methylene chloride	BRL	14		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
o-Xylene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Styrene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Tetrachloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Toluene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
trans-1,2-Dichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
trans-1,3-Dichloropropene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Trichloroethene	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH

Qualifiers:

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Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-09
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 4:00:00 PM
Lab ID:	1705546-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				(SW5035)				
Trichlorofluoromethane	BRL	3.5		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Vinyl chloride	BRL	7.1		ug/Kg-dry	242311	1	05/08/2017 20:16	KH
Surr: 4-Bromofluorobenzene	83	63-125		%REC	242311	1	05/08/2017 20:16	KH
Surr: Dibromofluoromethane	84.4	69.9-123		%REC	242311	1	05/08/2017 20:16	KH
Surr: Toluene-d8	89.3	70-122		%REC	242311	1	05/08/2017 20:16	KH
GASOLINE RANGE ORGANICS SW8015C				(SW5035)				
TPH (Gasoline Range Organics)	BRL	0.36		mg/Kg-dry	242623	1	05/14/2017 17:39	JE
Surr: a,a,a-trifluorotoluene	112	70.1-136		%REC	242623	1	05/14/2017 17:39	JE
DIESEL RANGE ORGANICS SW8015C				(SW3550C)				
TPH (Diesel Range Organics)	BRL	8.3		mg/Kg-dry	242339	1	05/10/2017 19:17	RF
Surr: Dioctylphthalate	79.6	54.5-121		%REC	242339	1	05/10/2017 19:17	RF
METALS, TOTAL SW6010D				(SW3050B)				
Arsenic	BRL	4.48		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
Barium	132	4.48		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
Cadmium	BRL	2.24		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
Chromium	17.9	2.24		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
Lead	9.53	4.48		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
Selenium	BRL	4.48		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
Silver	BRL	2.24		mg/Kg-dry	242449	1	05/11/2017 19:11	IO
PERCENT MOISTURE D2216								
Percent Moisture	19.1	0		wt%	R342850	1	05/11/2017 07:00	BD

Qualifiers:

- `*` Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-08
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 5:40:00 PM
Lab ID:	1705546-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B				**(SW7471B)**				
Mercury	BRL	0.113		mg/Kg-dry	242415	1	05/12/2017 17:31	AS
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
1,1´-Biphenyl	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,4,5-Trichlorophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,4,6-Trichlorophenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,4-Dichlorophenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,4-Dimethylphenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,4-Dinitrophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,4-Dinitrotoluene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2,6-Dinitrotoluene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2-Chloronaphthalene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2-Chlorophenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2-Methylnaphthalene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2-Methylphenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2-Nitroaniline	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
2-Nitrophenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
3,3´-Dichlorobenzidine	BRL	780		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
3-Nitroaniline	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4,6-Dinitro-2-methylphenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Bromophenyl phenyl ether	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Chloro-3-methylphenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Chloroaniline	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Chlorophenyl phenyl ether	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Methylphenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Nitroaniline	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
4-Nitrophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Acenaphthene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Acenaphthylene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Acetophenone	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Anthracene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Atrazine	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Benz(a)anthracene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Benzaldehyde	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Benzo(a)pyrene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Benzo(b)fluoranthene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Benzo(g,h,i)perylene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Benzo(k)fluoranthene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Bis(2-chloroethoxy)methane	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Bis(2-chloroethyl)ether	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Bis(2-chloroisopropyl)ether	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH

Qualifiers:

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- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-08
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 5:40:00 PM
Lab ID:	1705546-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
Bis(2-ethylhexyl)phthalate	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Butyl benzyl phthalate	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Caprolactam	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Carbazole	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Chrysene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Di-n-butyl phthalate	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Di-n-octyl phthalate	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Dibenz(a,h)anthracene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Dibenzofuran	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Diethyl phthalate	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Dimethyl phthalate	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Fluoranthene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Fluorene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Hexachlorobenzene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Hexachlorobutadiene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Hexachlorocyclopentadiene	BRL	770		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Hexachloroethane	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Indeno(1,2,3-cd)pyrene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Isophorone	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
N-Nitrosodi-n-propylamine	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
N-Nitrosodiphenylamine	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Naphthalene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Nitrobenzene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Pentachlorophenol	BRL	2000		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Phenanthrene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Phenol	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Pyrene	BRL	380		ug/Kg-dry	242340	1	05/10/2017 18:21	YH
Surr: 2,4,6-Tribromophenol	98.2	46.9-137		%REC	242340	1	05/10/2017 18:21	YH
Surr: 2-Fluorobiphenyl	76.1	50-115		%REC	242340	1	05/10/2017 18:21	YH
Surr: 2-Fluorophenol	66.3	41.2-105		%REC	242340	1	05/10/2017 18:21	YH
Surr: 4-Terphenyl-d14	90.7	51.9-126		%REC	242340	1	05/10/2017 18:21	YH
Surr: Nitrobenzene-d5	58	40.2-113		%REC	242340	1	05/10/2017 18:21	YH
Surr: Phenol-d5	65	45-109		%REC	242340	1	05/10/2017 18:21	YH
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,1,1-Trichloroethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,1,2,2-Tetrachloroethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,1,2-Trichloroethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,1-Dichloroethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,1-Dichloroethene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,2,4-Trichlorobenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH

Qualifiers:

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- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-08
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 5:40:00 PM
Lab ID:	1705546-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
1,2-Dibromo-3-chloropropane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,2-Dibromoethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,2-Dichlorobenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,2-Dichloroethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,2-Dichloropropane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,3-Dichlorobenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
1,4-Dichlorobenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
2-Butanone	BRL	33		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
2-Hexanone	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
4-Methyl-2-pentanone	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Acetone	BRL	65		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Benzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Bromodichloromethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Bromoform	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Bromomethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Carbon disulfide	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Carbon tetrachloride	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Chlorobenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Chloroethane	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Chloroform	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Chloromethane	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
cis-1,2-Dichloroethene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
cis-1,3-Dichloropropene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Cyclohexane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Dibromochloromethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Dichlorodifluoromethane	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Ethylbenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Freon-113	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Isopropylbenzene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
m,p-Xylene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Methyl acetate	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Methyl tert-butyl ether	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Methylcyclohexane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Methylene chloride	BRL	13		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
o-Xylene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Styrene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Tetrachloroethene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Toluene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
trans-1,2-Dichloroethene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
trans-1,3-Dichloropropene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Trichloroethene	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH

Qualifiers:

- * Value exceeds maximum contaminant level
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- > Greater than Result value
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- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-08
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/2/2017 5:40:00 PM
Lab ID:	1705546-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL VOLATILE ORGANICS SW8260B				**(SW5035)**				
Trichlorofluoromethane	BRL	3.3		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Vinyl chloride	BRL	6.5		ug/Kg-dry	242311	1	05/08/2017 20:39	KH
Surr: 4-Bromofluorobenzene	79.1	63-125		%REC	242311	1	05/08/2017 20:39	KH
Surr: Dibromofluoromethane	84.9	69.9-123		%REC	242311	1	05/08/2017 20:39	KH
Surr: Toluene-d8	91.1	70-122		%REC	242311	1	05/08/2017 20:39	KH
GASOLINE RANGE ORGANICS SW8015C				**(SW5035)**				
TPH (Gasoline Range Organics)	BRL	0.29		mg/Kg-dry	242623	1	05/14/2017 18:07	JE
Surr: a,a,a-trifluorotoluene	115	70.1-136		%REC	242623	1	05/14/2017 18:07	JE
DIESEL RANGE ORGANICS SW8015C				**(SW3550C)**				
TPH (Diesel Range Organics)	BRL	7.8		mg/Kg-dry	242339	1	05/10/2017 21:13	RF
Surr: Dioctylphthalate	95.8	54.5-121		%REC	242339	1	05/10/2017 21:13	RF
METALS, TOTAL SW6010D				**(SW3050B)**				
Arsenic	BRL	4.32		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
Barium	13.5	4.32		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
Cadmium	BRL	2.16		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
Chromium	28.4	2.16		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
Lead	4.95	4.32		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
Selenium	BRL	4.32		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
Silver	BRL	2.16		mg/Kg-dry	242449	1	05/11/2017 19:15	IO
PERCENT MOISTURE D2216								
Percent Moisture	14.0	0		wt%	R342850	1	05/11/2017 07:00	BD

Qualifiers:

- * Value exceeds maximum contaminant level
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- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 16-May-17

Client:	Resolute Env. & Water Resources Consulting, LLC	**Client Sample ID:**	RMW-07
Project Name:	Phase II ESA Macon GA	**Collection Date:**	5/3/2017 11:00:00 AM
Lab ID:	1705546-009	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TOTAL MERCURY SW7471B					**(SW7471B)**			
Mercury	BRL	0 118		mg/Kg-dry	242415	1	05/12/2017 17:38	AS
TCL-SEMIVOLATILE ORGANICS SW8270D					**(SW3550C)**			
1,1´-Biphenyl	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,4,5-Trichlorophenol	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,4,6-Trichlorophenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,4-Dichlorophenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,4-Dimethylphenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,4-Dinitrophenol	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,4-Dinitrotoluene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2,6-Dinitrotoluene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2-Chloronaphthalene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2-Chlorophenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2-Methylnaphthalene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2-Methylphenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2-Nitroaniline	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
2-Nitrophenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
3,3´-Dichlorobenzidine	BRL	870		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
3-Nitroaniline	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4,6-Dinitro-2-methylphenol	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Bromophenyl phenyl ether	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Chloro-3-methylphenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Chloroaniline	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Chlorophenyl phenyl ether	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Methylphenol	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Nitroaniline	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
4-Nitrophenol	BRL	2200		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Acenaphthene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Acenaphthylene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Acetophenone	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Anthracene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Atrazine	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Benz(a)anthracene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Benzaldehyde	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Benzo(a)pyrene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Benzo(b)fluoranthene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Benzo(g,h,i)perylene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Benzo(k)fluoranthene	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Bis(2-chloroethoxy)methane	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Bis(2-chloroethyl)ether	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH
Bis(2-chloroisopropyl)ether	BRL	430		ug/Kg-dry	242340	1	05/10/2017 18:47	YH

Qualifiers:

- * Value exceeds maximum contaminant level
- BRL Below reporting limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated method blank
- > Greater than Result value
- E Estimated (value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See case narrative
- NC Not confirmed
- < Less than Result value
- J Estimated value detected below Reporting Limit